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Mayapan Yucatan Mexico

H. E. D. POLLOCK
RALPH L. ROYS
T. PROSKOURIAKOFF
A. LEDYARD SMITH

PUBLICATION 619
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WASHINGTON, D.C. 1962

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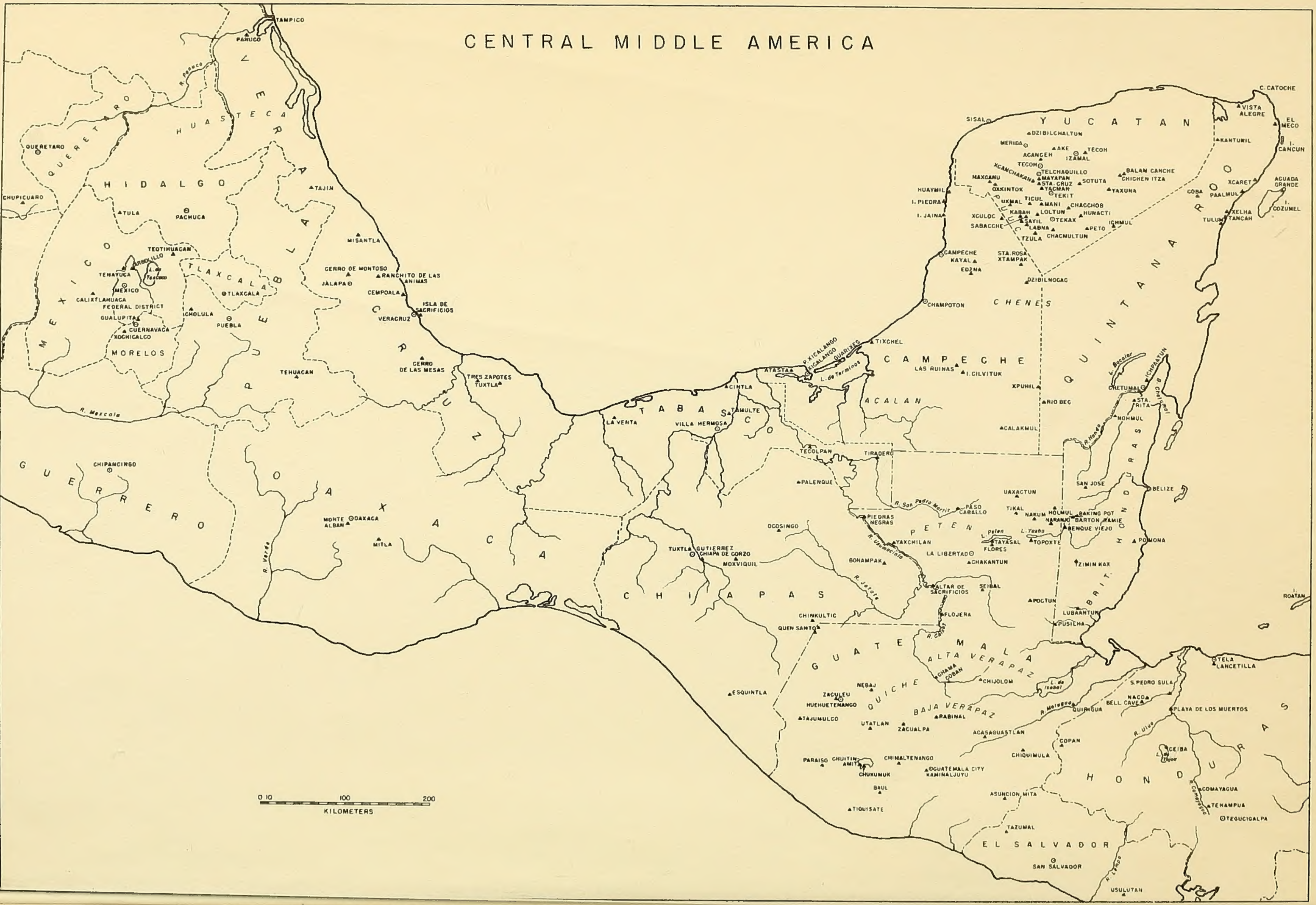
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PREFACE

The collection of monographs in the present volume forms a part of the final reporting on the results of a program of archaeological and historical researches concerned with Yucatan and adjacent areas that were begun in 1949 and are at present reaching completion. The character, the objectives, the expectations of this program are set forth in some detail elsewhere (Carnegie Institution of Washington Year Book 50, pp. 221-24), and the work is related to some forty years of Middle American research by Carnegie Institution in yet another place (Year Book 57, pp. 435-48). In the later article there is the following summary (ibid., p. 446):

> The program was designed to be compact and to reach the stage of drawing conclusions in a predictable number of years. It was, of course, based primarily on archaeology but with considerable reliance on the results of previously performed historical research. The locus of the work was the Yucatan peninsula, and the period under consideration was the approximately five centuries preceding the Spanish conquest. The focal point of field operations was the last important center of aboriginal Maya civilization, the ruins of Mayapan. Subsidiary operations were archaeological surveys and exploration in outlying areas thought to be important in the period under study, and an examination of certain known centers of Maya rule after the fall of Mayapan and during the final hundred years before the Spanish completed the conquest of Yucatan. The essence of the program, aside from more usual archaeological objectives, was an experiment in linking the results of archaeological research with the knowledge derived from aboriginal and early Spanish written records in the effort to discover how much of the intellectual, or at least nonmaterial, content of a bygone civilization could be recaptured.

6/11/59

By far the greater part of the field work, including the construction of living quarters and the installation of laboratory and office facilities, was carried on during the years 1951-1955. Such operations were made possible by a five-year contract between the Institution and the government of Mexico represented by the Instituto Nacional de Antropología e Historia. The projects undertaken each year and the staff involved have been recorded elsewhere (Year Books 50-54, Department of Archaeology) and will not be repeated here. Some work that both anticipated and followed full-scale operations should be mentioned. The historical and documentary research dealing with Mayapan, upon which is based part 1 of the present volume, had largely been completed in 1949 (Roys, R. L., 1949, p. 239), and the information had been made available for staff use at that time. In the autumn of the same year there began the topographic mapping of the ruins of Mayapan, an operation that was completed in 1951 when the resulting map was published (Current Report 1). Lastly, there was a small amount of field work, the stratigraphic excavation of pottery at the sites of Uxmal and Kabah, that was carried out in 1956 (Year Book 55, pp. 336, 338-39) after major operations at the ruins of Mayapan had been suspended. As our five-year contract with the Mexican government had expired, this work was done under a special permit from the Instituto Nacional de Antropología e Historia.

Although the disposition of the collections described in part 4 of the present volume is recorded there, and a forthcoming monograph on the pottery of Mayapan will give similar notice, it seems well to make mention here of the disposal of all collections resulting from our work. This material, with a single exception mentioned below, was turned over, partly in November 1957, partly in May 1958, to the Merida, Yucatan, office of the Instituto Nacional de Antropología e Historia. Collections were organized so as to provide easy reference in the future, and a carefully arranged documentation accompanied the specimens (Year Book 57, pp. 450-51). Duplicate records are on file at Peabody Museum, Harvard University. The exception referred to above was the distribution in 1958, by permission from the Mexican government, of type collections of Mayapan pottery fragments to the following museums in the United States: American Museum of Natural History; Middle American Research Institute, Tulane University; Museum of Anthropology, University of Michigan; Peabody Museum, Harvard University; University Museum, University of Pennsylvania; and the United States National Museum. Similar collections were also sent to the Museo Nacional de Antropología and Mexico City College in Mexico.

It was mentioned at the beginning of this preface that the present volume forms a part of the final reporting on the results of our researches. Five monographs pertaining to this work have already appeared (Berlin, 1956; Roys, R. L., 1952, 1954, 1957; Sanders, 1960), and the present collection will shortly be followed by a monograph by R. E. Smith dealing with the ceramics of Mayapan. As the program developed, two series of papers described the work being undertaken and reported the preliminary findings (Year Books 50-57; Current Reports 1-41). Three short articles have presented general information to the nonspecialized reader (Proskouriakoff, 1954, 1955; Thompson, J. E. S., 1955). Attention should be called to a monograph (Thompson, R. H., 1958) and a doctoral thesis (Hester, 1954) which do not directly concern the central interests of our work but which are based on field work done under the program. Finally, mention may be made of the previously performed historical research upon which the work of the program relied. Such publications are too numerous to list here, but the interested reader is referred to part 1 of the present volume for titles.

In each of the monographs that report the results of our researches acknowledgment is made of the many people who assisted. Here we wish to thank the authorities of Mexico who made work in their country possible. To Ignacio Marquina, Director of the Instituto Nacional de Antropología e Historia during the time our field operations were in progress; to Eduardo Noguera, then Director of the Sección de Monumentos Prehispánicos; to Alberto Ruz, archaeologist in charge of the areas in which we worked, we offer thanks for a complete understanding of our objectives and of our needs, and for providing all assistance within their powers. It is quite safe to say that no foreign group could have been more openly received or more wholeheartedly supported than were we. It is greatly to the credit of these men and of their country.

Lastly, the writer, to whose lot it fell to coordinate the various activities under this program wishes to thank the members of the staff. Their names appear as authors of monographs, of Current Reports, of articles in Year Books. It is due to their fine cooperation and unselfish labors that the results of a large group of investigations have been brought together so promptly.

H. E. D. Pollock

Cambridge, Massachusetts
March 1960

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INTRODUCTION

H. E. D. Pollock

"In that guardianía [Mani], near a mission-town called Telchac, a very populous city once existed called Mayapan in which (as if it were a court) all the ciciques and lords of the province of Maya resided and there they came with their tribute" (see part 1, p. 49). So wrote Fray Antonio de Ciudad Real, who visited the already crumbling remains of the city nearly 400 years ago. He had previously explained that the true name of the land and province that was called Yucatan was Maya. In the less colorful speech of today we say that the ruins of Mayapan are located 2 kilometers south of the village of Telchaquillo (i.e. Telchac), some 40 kilometers south-southeast of Merida, the capital of Yucatan (see frontispiece); and for more exact geographical data we turn to the map of the ruins (see back cover pocket) for latitude and longitude and elevation above sea level. To complete the thought in Ciudad Real's statement, moreover, we add that, in the closing centuries of aboriginal Maya civilization, before those people were conquered by the Spanish, the city of Mayapan was the seat of what was apparently a centralized government exerting control over much of northern Yucatan. It is this ancient capital, possibly the first, and certainly the last, great Maya city, in the sense of a large urban population, that is the subject of this book.

The natural setting of the Yucatan peninsula—its physiography, climate, and flora and fauna—has been described so often there seems little reason to take up that subject in any detail here. (See Enciclopedia Yucatanense, 1944-47, vol. 1; Hatt and others, 1953, pp. 7-14; Lundell, 1934; Morley, 1956, chap. 1 and p. 449; Roys, R. L., 1931, and 1943, chap. 1; Shattuck and others, 1933, chap. 1; Tozzer, 1957, 11:1-4. Other references are given in all these works. Also see Current Report 41 for pre-Columbian fauna at Mayapan.) Suffice it to say that the region of Mayapan is eminently typical of the western half of the Yucatan plain north of the low hills known as the serranía or Puuc. The monotonously level land that rises from the north coast toward the south at the rate only of about 1 meter in every 5 kilometers presents an incredibly stony surface of limestone bedrock that is often sharply broken by low hillocks or ridges a few meters in height and by natural sinks, many of which reach the ever-present underground water table. The topographic map of Mayapan (see back cover pocket) shows an excellent example of the land surface, and the area of the map could be extended a good many kilometers in any direction without exhibiting a notable change in the topography. Soil is so sparse that one often has the impression of viewing more rock than earth.

The annual rainfall, which occurs mainly from May to October and which varies considerably from year to year, averages about 1 meter in the region of Mayapan. Mean monthly temperatures range from about 71° F. to 82° F., but minimum temperatures in the low 40's, occurring during January and February, and maximum temperatures of 105° F. or above, usually in March, April, or May, are not uncommon. Present-day vegetation, which is interrupted by large cleared areas for henequen plantations and by numerous smaller cultivated fields, chiefly planted to maize, is a dry scrub forest, entirely secondary in nature, thorny, difficult of passage, offering limited shade, and generally inhospitable to one accustomed to the vegetation of a more temperate climate.

To make this rocky, shadeless plain even less friendly to the use of man, there is almost no surface water. In the region we are describing, the western half of the northern plain, there are no rivers and no lakes. There are a few natural ponds, known as aguadas, and a number of small basins in the native rock, known as sartenejas, but many of the former, and virtually all the latter, are without water during the dry season. Fortunate for the ancient inhabitants of this land, indeed imperative to sustain them before the use of iron enabled man to excavate wells through the native rock, is the existence of numerous natural sinks, or cenotes, that penetrate to the underground water table. And in this respect the terrain within the limits of Mayapan is not altogether typical of the region. In an area of a little over 4 square kilometers there are at least 26 cenotes, 19 of which give access to water. Although these sinks are very common in the northwest plain, it is highly unlikely that many areas of comparable size have any such concentration as this. The site was, then, highly suitable for a concentrated population, as far as water was concerned.

There is probably no ancient Maya city that is more frequently mentioned in the native literature and early Spanish writings than Mayapan. The meaning of the name, "the standard, or banner, of the Maya," is given us by Landa (see part 1, p. 57). Unlike so many Maya ruins, which carry descriptive names of relatively recent date, given for the most part by local people who have long since forgotten the old original names, the identity of Mayapan has persisted in the mind of man from its founding to the present day. Throughout the early literature, which is so ably discussed in part 1 of this volume, the city is pictured as the most important center of Yucatecan Maya civilization before the coming of the Spanish. One might expect, then, that a place so celebrated would receive early and concentrated attention by the archaeologist. Owing, probably, to the extraordinary disrepair, the comparatively small size of the ceremonial and civic buildings, and the general drabness of the ruins, this was not the case, and intensive study did not come about until a decade ago, when Carnegie Institution began the work described in this volume and in the companion publications mentioned in the Preface. Some exploration and minor excavations had, however, preceded our work.

When one looks to the history of archaeological exploration at some Maya ruin, and particularly in Yucatan, it is amazing how often he must start with the name of John L. Stephens. And Mayapan is no exception. Stephens (1843, 1:130-41) spent a day at the ruins late in 1841. He describes the more striking features of the ceremonial center of the site and illustrates the principal pyramid (Str. Q-162), the large round building (Str. Q-152), and some fallen pieces of sculpture. He also reports the existence of the great wall surrounding the city, although he did not see it. The main value of his account today is the description and illustration of the large round building, which has since fallen and is now a pile of rubble.

Some twenty years later, in 1865, Brasseur de Bourbourg (1866, pp. 234-49) visited Mayapan, spending nine days in the ruins. Brasseur was conversant with the Landa text, and he constantly attempted to fit what he saw to Landa's historical account and description of Mayapan. He saw and described the city wall, giving a sketch plan of one of the major gateways. In the central group of ruins, he repeated much of Stephens' work, describing and illustrating the principal pyramid, or Temple of Kukulcan, and the large round building, which was still standing. In respect to the former, he made the perceptive observation that the plan of the temple atop the pyramid was probably the same as that of the Castillo at Chichen Itza. He found, probably in the court in front of the pyramid, and illustrated, a monument that has since become known as Stela 1 and that is now at the near-by hacienda of Xcanchakan. Brasseur's report is mainly useful at present in amplifying the Stephens description and illustration of the now fallen round building and in identifying Stela 1 as surely having come from Mayapan.

In 1881 Augustus Le Plongeon (1882) made a short stay at Mayapan. By that time the large round building had fallen, as the result, we are told, of being struck by lightning in 1867, and Stela 1 had been moved to Xcanchakan. He had with him the mayordomo of Rancho San Joaquin, who had been with Brasseur and who showed Le Plongeon the spot where the stela was found. Unfortunately, Le Plongeon's description of that location (ibid., p. 253) creates an impossible situation, and we shall never be certain of the original site of the monument. Both Brasseur's and Le Plongeon's insistence, however, that the finding of the stela followed Landa's account of stones of this sort being in the plaza of the city, as well as other details of their writings, would seem to place it in the court north of the great pyramid (Str. Q-162) and most probably somewhat east of the stairway on that side of the pyramid, where a number of other monuments have been found.

Almost forty years went by before any archaeologist again visited Mayapan and wrote about it. In 1918, Morley (1918, pp. 274-75) and Gann (1924, pp. 202-206) briefly inspected the site. They saw, and followed for a short distance, the city wall that Brasseur had seen fifty years before, but their chief contribution was Morley's reading of the date 10 Ahau on the stela at Xcanchakan, which at that time he called Stela 9. Using the then current Morley-Spinden correlation of the Maya and Christian calendars, he assigned this date the position 12.4.0.0.0 in the Maya calendar, or A.D. 1438 (see also Morley, 1920, pp. 574-75).

The late T. A. Willard (1933, pp. 365-73) published a short account of Mayapan which consists mainly of quoting Stephens' description of the ruins. It is not clear from his writing whether he visited the site or not. His inclusion in the book of photographs of the principal pyramid and of some serpent columns at the entrance of a temple (Str. Q-143) presupposes that he was there, but the pictures may not be his own. The only value of his description is the illustration which shows an architectural feature, the serpent column, well known in the Maya-Toltec buildings at Chichen Itza.

In the winter of 1936 Lawrence Roys spent a day at the ruins of Mayapan and, among other things, made a careful examination of the masonry of the few vaults that remain standing. Although the conclusions he arrived at in a subsequent article (L. Roys, 1941), in which he illustrates a vault section (Str. R-97), need emendation in the light of today's greater knowledge, nevertheless this was the first detailed study of any example of Mayapan masonry.

The first archaeological survey of Mayapan that was at all comprehensive was carried out in 1938 by R. T. Patton at the instigation of Morley (1938, pp. 141-42) and under the sponsorship of Carnegie Institution. The primary objective of the work was the mapping of the wall around the city and of the main ceremonial and civic center of the site. The resulting maps, which were never published, were of great assistance to Jones in making his detailed topographic map of the ruins (Current Report 1). Aside from establishing the size of the area encompassed by the city wall, the careful search of the site necessitated by the mapping brought forth a large amount of previously unknown, or only vaguely known, information. The general character of the wall, of its entrances, and of the civic and religious architectural remains was ascertained. This gave considerable insight into the period of the visible ruins and made possible comparisons with remains in other areas. Visiting the site while Patton was there, Morley (ibid.), now using the Goodman-Martínez-Thompson correlation, changed his reading of the date of Stela 1 (Xcanchakan) to A.D. 1185, and read the dates of two other stelae (5 and 6) as A.D. 1244 and A.D. 1283.

Excavation, other than of the most minor sort, and none of it reported upon, had not been practiced at Mayapan during the various visits of archaeologists referred to above. In 1942, however, the late G. W. Brainerd (1942, pp. 254-55), in connection with a general ceramic survey of the Yucatan peninsula for Carnegie Institution, spent two weeks at the site putting down stratigraphic trenches for pottery. The result of this work, final publication of which was unavoidably delayed for many years (Brainerd, 1958), was quite clearly to place the time of occupation of the site in the sequent phases of pre-Columbia Maya civilization. Knowledge previously derived from a none too trustworthy native history and from rather superficial archaeological examination of the ruins was now reliably confirmed by ceramic stratigraphy. Near the end of Brainerd's stay at Mayapan he was joined by E. W. Andrews (1942, pp. 261-63), who remained there for a month carrying on architectural studies. The brief notices concerning this work that have appeared (Andrews, ibid., and 1943, pp. 81-82) serve to confirm and somewhat to amplify the results of Patton's survey.

So much for earlier archaeological exploration of the ruins of Mayapan. Let us now turn to the recent work of Carnegie Institution. In preceding pages there have been frequent references to the native literature and early Spanish accounts of the history of Mayapan. This is the subject of part 1 of the present volume, where Roys translates, analyzes, and interprets these early records. He believes, it will be found, that the native chronicles, which give much attention to events in the history of Mayapan, are primarily a history of the Itza. Not attempting to decide whence the Itza originally came, Roys points out both Maya and highland Mexican cultural affinities and suggests the possibility of a Gulf Coast origin. The Cocom, who play so large a part in the early Spanish accounts of Mayapan, he believes, were descendants of, or in any case identified themselves with, the Itza.

Following the chronicles back in time, Roys sees three great episodes of Itza history in the Yucatan peninsula, each occupying approximately a katun round of 256 years. The first, lasting from about A.D. 950 to 1200, finds the Itza settled in Chakanputun, which Roys takes to be the region of present-day Champoton. Parenthetically, it may be mentioned that the identification of Chakanputun as Champoton is not a certainty. Around A.D. 1200, or shortly before, the Itza are driven out of Chakanputun, an event that marks the end of the first episode and the beginning of the second. Migrating to the region of Lake Peten, and thence up the east coast of Yucatan, a part of them, the so-called "remainder of the Itza," "discover" Chichen Itza early in the thirteenth century, possibly in Katun 4 Ahau (A.D. 1224-1244). After a stay there of some years Mayapan is "founded" in Katun 13 Ahau (A.D. 1263-1283), the implication being that some of the Itza remain in Chichen Itza. Around A.D. 1380 there is a revolt at Mayapan, and Roys considers that this event very likely marks the beginning of the Cocom rule at that city. Finally, in Katun 8 Ahau (A.D. 1441-1461), the Cocom government is overthrown at the instigation of the Xiu, a foreign group, latecomers to Yucatan who have briefly been living in the old ruins of Uxmal. Mayapan is presumably abandoned, possibly in the year 1446, and certainly ceases to exist as the seat of centralized government. In the same Katun 8 Ahau a group of Itza living in or around Chichen Itza migrate to the region of Lake Peten. These events, the fall of Mayapan and the departure of the Itza from Chichen Itza, mark the end of the second episode of Itza history in the Yucatan peninsula. The third and final episode is the residence of those people on Lake Peten until they were conquered by the Spanish in 1697, just when a new, and to the Itza always fateful, Katun 8 Ahau was to begin. Northern Yucatan, in the meantime, with the fall of Mayapan and the end of centralized government, was divided into a number of independent, and often warring, states, which were conquered by the Spanish in the middle of the sixteenth century.

The foregoing, in briefest outline, is Roys' interpretation of what the native literature and early Spanish writers have to say of the people who founded Mayapan and of events that have a more or less direct bearing on the history of that city. Needless to say, he goes into much detail about Mayapan as the principal seat of authority in the peninsula, and, in order to bring this history into focus, he discusses the early hegemony of Chichen Itza under the Toltec. All this raises the problem of chronology and of how the findings of archaeology fit his historical reconstructions which are based primarily on literary sources.

In the introduction to part 1, Roys explains that the Christian dates he uses in his study are according to the Goodman-Martínez-Thompson correlation of the Maya and Christian calendars, adding that katun ending dates are three years earlier according to the Spinden correlation. He further explains that he equates the date A.D. 889 with the Maya Initial Series date 10.3.0.0.0, but that the Spinden correlation makes that date about A.D. 630. The effect of this ending of the Initial Series, or Classic, period 259 years earlier is, of course, to extend the length of the following post-Classic period, which terminates with the Spanish Conquest, by that number of years. A fact that is so well known to students of Maya history that Roys does not feel it necessary to mention it is that any particular katun ending can reoccur every 256 years. For example, a Katun 13 Ahau, such as that which presumably witnessed the founding of Mayapan, can refer to the period A.D. 1263-1283 or the years A.D. 1007-1027 in the Goodman-Martínez-Thompson correlation, or three years earlier for each of these periods in the Spinden correlation.

The preceding remarks are simply to indicate some of the varying possibilities in the interpretation of the Maya hieroglyphic and historical records. In our discussion of the chronology of post-Classic Yucatan we shall have occasion later on to refer to such alternative possibilities.

The recently published work of the late G. W. Brainerd (1958) arranges the aboriginal history of Yucatan in a sequence of cultural stages derived primarily from ceramic studies. Through no fault of Brainerd's, the ceramic remains with which he had to work could not always be separated on the basis of a clear-cut stratigraphy, but by and large there is no reason to doubt the order of the sequent stages as he has arranged them. These are, from early to late, the Formative, Regional, Florescent, Mexican, and Post-Conquest. The Formative and Mexican stages he divides into Early, Middle, and Late substages. It is the Mexican stage, which covers a time often referred to as the post-Classic period, that primarily concerns us here, but we must also give some attention to the Florescent. In briefest outline these stages and substages are characteristically represented by the following remains:

1. Florescent. The fully developed architecture of the sites of Uxmal, Kabah, Sayil, and Labna in the Puuc region. The common slipped pottery is Florescent Medium Slateware; the chief imported ware is Z Fine Orange. To judge from the pottery, the purely Maya type buildings at Chichen Itza are somewhat earlier in this stage than the great architecture of the Puuc sites.

2. Early Mexican. The Maya-Toltec buildings at Chichen Itza. The common slipped pottery is Mexican Medium Slateware; the chief imported wares are X Fine Orange and Tohil Plumbate.

3. Middle Mexican. Mainly post-architectural at Chichen Itza; beginning of building at Mayapan. The common slipped pottery is Coarse Slateware (Black-on-cream).

4. Late Mexican. The fully developed architecture of Mayapan. The common slipped pottery is Coarse Redware (Mayapan Redware); the chief imported ware is Mayapan Fine Orange (V Fine Orange). Figurine (effigy) censers occur in great profusion late in this substage.

It has been mentioned above that the ceramic material with which Brainerd had to work was not always derived from clear-cut stratigraphic conditions. This lack is particularly critical in determining the relative chronological positions of the Florescent stage and the Early Mexican substage. Brainerd was well aware of this and considered the possibility of an overlap of these stages. Although he comes to the conclusion that there was little or no overlap, it is just as well we keep in mind that the data on this point are not clear and there is the definite possibility that the late culture of the Puuc region and that of Maya-Toltec Chichen Itza for a time existed coevally. Another matter worth recording is that our recent work in Yucatan has made it amply clear that a major break in cultural tradition, as witnessed by a sharp degeneration of the quality of the remains, came about at the end of Maya-Toltec times. This event tends to be obscured in being marked only by the passage from one substage to another (Early Mexican-Middle Mexican) in Brainerd's arrangement of cultural stages. It does not affect the sequence or the relative chronology, but it may have implications concerning history.

Before going on to the problem of a more precise chronology than can be gained from the study of ceramic remains, let us comment briefly on the archaeological findings at Mayapan and on how these fit the Brainerd scheme of cultural stages in Yucatan. Unfortunately, the final analysis of the pottery has not yet been completed, but we are familiar with the results in broad outline if not in detail. Both from Brainerd's work and from that of Carnegie Institution we know that man has lived in, or camped at, or at least passed through, the site of Mayapan from Formative times to the present. We know this from trifling amounts of pottery from the Formative and Regional stages and a larger, but still relatively small, amount of Florescent and Early Mexican pottery. There are also a goodly number of building stones, either lying loose or re-used in later constructions, that give every indication of being of the Florescent, and probably late Florescent, stage. Not a single Florescent or Early Mexican building, however, has been found, and it seemingly was not until at least Middle Mexican times or even later that any structure that now survives was erected. It was also apparently not until the end of Middle Mexican or the beginning of Late Mexican times that pottery was made and used in quantity.

Owing to the trifling amount of Early Mexican pottery found by Brainerd, he postulates a virtual abandonment of the site between Florescent and Middle Mexican times. R. E. Smith, whose study of Mayapan pottery is now in progress, informs the writer that the much larger body of material with which he has been able to work shows about an equal proportion of Florescent Medium Slateware and Early Mexican Medium Slateware, the two combined amounting to less than 2 per cent of all pottery from the site. Smith's findings thus would indicate a minor occupation throughout Florescent and Early Mexican times.

Whether or not Mayapan was occupied during the Middle Mexican substage is a moot point. Coarse Slateware is found in small amounts—a little over 1 per cent of all pottery—but it is invariably mixed with Coarse Redware. What may be indicated is a transition from the Middle Mexican to the Late Mexican substage. Finally, it was the Late Mexican substage that saw Mayapan in full flower, with most of the architecture being erected and the pottery being made at that time. At some point during this great period of Mayapan, effigy, or figurine, censers began to be manufactured in great quantities, and they continued to be made until the fall of the city and very probably up to the arrival of the Spanish.

In attempting to date his cultural stages Brainerd turns to the hieroglyphic records and the native literature. He favors the Goodman-Martínez-Thompson correlation of the Maya and Christian calendars, as does Roys, and rather closely follows the historical reconstructions of J. E. S. Thompson (1941; 1945) from the end of the Florescent stage to the Spanish Conquest. This results in the following:

End of Florescent stage. 10.3.0.0.0-10.8.0.0.0, A.D. 889-987.

Early Mexican substage. Katun 4 Ahau, ending at 10.8.0.0.0, A.D. 987—during which katun Itza settle at Chichen Itza—to Katun 10 Ahau, ending at 10.18.0.0.0, A.D. 1185.

Middle Mexican substage. Katun 10 Ahau, ending at 10.18.0.0.0, A.D. 1185—with Itza leaving Chichen Itza in Katun 8 Ahau (A.D. 1185-1204)—to Katun 13 Ahau, ending at 11.3.0.0.0, A.D. 1283.

Late Mexican substage. Katun 13 Ahau, ending at 11.3.0.0.0, A.D. 1283—with fall of Mayapan in Katun 8 Ahau (A.D. 1441-1461)—to Spanish Conquest, A.D. 1540.

Let us now compare the foregoing chronological scheme and historical outline with that given by Roys in part 1 of this volume. Broadly speaking, the chronology does not differ greatly. The time of Toltec dominance at Chichen Itza (Early Mexican substage) is approximately the same, and the great period at Mayapan (Late Mexican substage) is the same. When we come to historical detail, however, there are major differences. Katun 4 Ahau, when the Itza settle at Chichen Itza, is placed at A.D. 968-987 by Thompson and Brainerd, who identify the Itza as a people of Toltec culture. Roys places this event a katun round later, at A.D. 1224-1244, after the Toltec regime was over. The Katun 8 Ahau that marks the departure of the Itza from Chichen Itza is placed by Thompson and Brainerd at A.D. 1185-1204, whereas Roys places this event in A.D. 1441-1461, the katun which witnessed the overthrow of Mayapan. What this amounts to, in summary, is that Roys does not think that the Itza brought about the Maya-Toltec culture of Chichen Itza—an opinion shared by Tozzer (1957) in his study of that site (but see Thompson, 1959)—but were a later people who reached northern Yucatan after the great period of that city, in other words during Brainerd's Middle Mexican substage, and when, as we have seen, there was a pronounced degeneration of culture.

It may have been noticed in our comparison of the Roys historical reconstruction with the Thompson-Brainerd scheme that we have until now avoided mention of this Middle Mexican substage. Dealing with the archaeological remains, Brainerd sees this substage as consisting of the remnants of, or inheritance from, an expiring Maya-Toltec culture at Chichen Itza and the beginnings of what developed into the culture of the great period at Mayapan. Roys, approaching the matter from the historical point of view, gives attention to certain events of this time at Chichen Itza and elsewhere in Yucatan, events which he attributes to the Itza, but does not turn to Mayapan until its reputed "founding" in the Katun 13 Ahau that marks the beginning of Brainerd's Late Mexican substage, or the great period of the city. Landa tells us, it will be remembered, that a certain Kukulcan left Chichen Itza and established another city, which he called Mayapan. Roys interprets this as a group of Itza going from Chichen Itza to Mayapan, and in the chronicles he finds that this event occurred in a Katun 13 Ahau, which he believes ended in A.D. 1283. The hieroglyphic records, on the other hand, if we make the dubious assumption that the stelae at Mayapan record katun endings and that they mark contemporary events at that city, show that the city must have been occupied at least as early as A.D. 1244 (Brainerd, 1958, p. 22). Using all available evidence, Brainerd concludes that the major occupation of Mayapan began sometime before that date, possibly around A.D. 1200, and before the official "founding" of the city as suggested by Roys. We of course know that there had been minor settlement of the site in even earlier times, but the occupation to which we are referring marked the beginning, as amply witnessed by the archaeological remains, of Mayapan as a center of importance.

We have noted considerable differences between Roys' and Brainerd's arrangements of historical events. Brainerd coordinates these events with his archaeological findings. It is interesting to attempt to do the same with Roys' historical scheme. In the first place, it will be remembered that this history, according to Roys, is essentially a history of the Itza, and it begins in any detail only after the exodus of the Toltec from Chichen Itza, or at least after their fall from power. Before that time we merely note the Itza as living in Chakanputun. After A.D. 1200, just about the end of the Toltec regime, when civilization had pretty well gone to pot, we find the Itza raiding in northern Yucatan, and in Katun 4 Ahau (A.D. 1224-1244) they settle at Chichen Itza. This event, which shortly follows the Toltec rule, must fall in Brainerd's Middle Mexican substage, the characteristic pottery of which is the Coarse Slateware (Black-on-cream) that is found in minor quantities at Chichen Itza immediately following the Maya-Toltec Mexican Medium Slateware.

The next event in Roys' history is the "founding" of Mayapan by a group of Itza from Chichen Itza in Katun 13 Ahau (A.D. 1263-1283). It will be remembered that the start of the principal occupation of Mayapan is marked by the presence of Coarse Slateware. What we should like to know is the time of the first occurrence of this pottery at that site. As has already been mentioned, Brainerd believes that this happened early in the thirteenth century, some years before the "founding" of the city as determined by Roys. Although Brainerd's use of dates on stelae at Mayapan is open to question (see part 2, p. 135), a fact recognized by him, there is some evidence from our recent work that the site may have started as a relatively small religious center and only later have taken on the size and importance that went with the establishment of a capital city (see part 2, p. 133, and part 3, p. 264). We cannot be certain with our present knowledge just when the principal occupation of Mayapan began. We know that this occurred during a time characterized by the manufacture of Coarse Slateware (Middle Mexican substage), but whether it was at the end of that period, presumably in the katun that marks the traditional founding of the city, or several katuns earlier, must for the present remain an open question. Could we be certain that there was a Middle Mexican settlement here before the "founding" of the city, it would be tempting to see this as an Itza colony. Roys suggests, in correspondence with the writer, that during the Itza raids into northern Yucatan beginning in Katun 8 Ahau (A.D. 1185-1204) they may well have established a base at a place near Mayapan called Saclactun, a name associated with Mayapan in the native literature (see part 1). A situation of this sort would throw some light on why the site of Mayapan was selected for the new capital.

It has been indicated earlier that the great period of Mayapan, from its "founding" in Katun 13 Ahau (A.D. 1263-1283) to its fall in Katun 8 Ahau (A.D. 1441-1461), when the city was the capital of northern Yucatan, precisely coincides with Brainerd's Late Mexican substage, to which he assigns the vast preponderance of the remains at Mayapan. There is nothing in our recent findings, moreover, that would change this situation, so long as we accept the Roys and Brainerd chronology. Well along in this period, around the end of Katun 3 Ahau and the beginning of Katun 1 Ahau (A.D. 1382), Roys believes (see part 1) that there was a revolt at Mayapan, that new lords, possibly another faction of the Itza that called themselves Cocom, took over, and that shortly thereafter, in Katun 1 Ahau (A.D. 1382-1401), Mexican mercenary troops, the Canul, were brought to Mayapan from Tabasco. Also well along in this period, possibly about the time of the above happenings, there came into use small stone sculptures, known as altar figures, one of which carried the dates 4 Ahau, 13 Ahau, 1 Ahau, and also there began to be made tremendous numbers of effigy censers that portrayed a number of Mexican deities and that, along with the altar figures, were associated with new religious practices (see part 4, pp. 334 and 428, and Current Report 40). One wonders if the Cocom, or more probably the Canul, were not in some measure responsible for these changing religious forms.

In the preceding discussion of the documentary history and its archaeological background we have had occasion to refer to a number of dates in the Christian calendar. All these have followed the Goodman-Martínez-Thompson correlation of the Maya and Christian calendars. This is because both Brainerd, who mainly follows Thompson's ideas of Maya history, and Roys accept that correlation. Since the preparation of Brainerd's (1958) book, which was published posthumously, a number of archaeological dates determined by the radiocarbon method have appeared, and some of them, if taken uncritically, would seem to favor the Spinden correlation and the longer post-Classic period (Mexican stage) that is called for by that correlation (see p. 5). There are, for example, to mention times and places that particularly concern us here, two specimens (Y-627, Gro-613) taken from typical Florescent style buildings at Uxmal that are dated A.D. 570 ± 50 and A.D. 650 ± 100. There is a specimen (Y-626) from a typical Early Mexican substage building at Chichen Itza that is dated A.D. 800 ± 70. A specimen (Gro-452) from Mayapan that presumably marks a very early time in the principal period of occupation of that city, possibly at the transition from the Middle Mexican to the Late Mexican substage, is dated A.D. 1015 ± 95. Two specimens (Gro-1166 and Gro-450) from Mayapan that come from buildings apparently built relatively late in the history of the city are dated A.D. 1315 ± 55 and A.D. 1360 ± 90. These last Late Mexican substage dates contribute nothing to the problem of correlating the Maya and Christian calendars but simply confirm the historical sources that place the great period of Mayapan during the fourteenth and early fifteenth centuries after Christ. (See Deevey, Gralenski, and Hoffren, 1959; de Vries, Barendsen, and Waterbolk, 1958; de Vries and Waterbolk, 1958, for radiocarbon dates cited above. Note de Vries and Walterbolk, 1958, p. 1551, for correction in Groningen dates. Dates are rounded off to nearest five-year ending.)

Accepting these dates at face value, for the moment, it is obvious that the Florescent stage specimens from Uxmal suggest the Spinden correlation. Brainerd believes that the Florescent stage lasted from about 9.14.0.0.0 to about 10.8.0.0.0 in the Maya calendar, or A.D. 711-987 by the Goodman-Martínez-Thompson correlation, and A.D. 452-728 by the Spinden correlation. Thompson (1945) thinks that the Puuc, or Florescent, style of architecture may have begun some eighty or ninety years earlier than the time suggested by Brainerd. As there is no reason to believe, however, that even the early date at Uxmal, which comes from the earliest known of a series of superimposed structures in the Adivino pyramid (see Ruz, 1956, fig. 2), is representative of a particularly primitive style of Florescent architecture, the Spinden correlation is still indicated.

The Early Mexican substage is set by Brainerd at 10.8.0.0.0 to 10.18.0.0.0 in the Maya calendar, or A.D. 987-1185 and A.D. 728-925 by the respective correlations. Thompson thinks this period may have lasted twenty years longer, but in any event the radiocarbon date from Chichen Itza suggests the Spinden correlation, as long as we follow the Brainerd-Thompson idea that there was no overlap of the Florescent and Early Mexican stages. Should we see an overlap here, a possibility that has been mentioned earlier, an overlap that carries the Early Mexican substage backward in time rather than bringing the Florescent stage forward, the Chichen Itza date just might be made to fit the Goodman-Martínez-Thompson correlation.

The early Mayapan date that presumably marks the beginning of the principal occupation of the city appears to be from the end of the Middle Mexican and the beginning of the Late Mexican substage which Brainerd places at 11.2.0.0.0 to 11.3.0.0.0 in the Maya calendar, or A.D. 1263-1283 and A.D. 1004-1023 by the two correlations. Again the earlier correlation is indicated. If, moreover, we are to assume that the "founding" of Mayapan in Katun 13 Ahau falls anywhere near the beginning of the principal occupation of the site, this early Mayapan date suggests the introduction of another katun round of 256 years into the Roys chronology with Katun 13 Ahau falling in A.D. 1007-1027 or A.D. 1004-1023, depending on whether the point of departure for the katun count is that of Thompson or of Spinden. The effect of this would be approximately to double the life of Mayapan suggested by Roys, Brainerd, and Thompson, and the prolongation of the post-Classic period, or Mexican stage, made necessary by the Spinden correlation would thus occur mainly in the Late Mexican substage. Possibly it should be explained that the cultural stages we refer to here have little to do with Spinden's ideas of Maya history, which differ widely from those of Roys, Brainerd, and Thompson. What we are attempting is to fit the historical and cultural reconstructions of the latter three to the chronology of the Spinden correlation.

There is some basis in the documentary sources for a longer Mexican stage. Landa says, "after they had lived in that city [Mayapan] for more than five hundred years, they abandoned it and left it in solitude..." (see part 1, p. 59). This places the beginning of Mayapan in the tenth century. Although one might argue Landa had reference to a Florescent or Early Mexican settlement at Mayapan, the context certainly suggests that he is referring to the late and principal occupation of the city. In the Relación de Chunhuhub (see part 1, p. 52), we read, "It is not a thousand years that they have worshipped idols, because the lords of Chichen Itza and their vassals, they give to understand, were not idolaters," and the Relación de Quinacama and Muxuppipp (see part 1, p. 55) "tells of the introduction of idolatry by 'Quetzalquat' and the Mexicans about 800 years previously." In contradiction to these statements, and preferred by Roys (see part 1, pp. 29 and 38), is the remark by Sánchez de Aguilar that the Maya had been subjects of the Mexicans (i.e., the Toltec) 600 years before the arrival of the Spaniards, or since the middle of the tenth century.

It has been mentioned that the radiocarbon dates we have cited were selected because they deal with that part of the history of northern Yucatan that has particularly concerned us. There are, of course, other radiocarbon dates from the lowland Maya area, some of which have direct bearing on the correlation question, and there are dates from the Maya highlands and from elsewhere in Middle America that in one way or another may be brought into the problem. (Besides the sources cited above, see Barker and Mackey, 1959; Crane and Griffin, 1959; Kulp, Feely, and Tryon, 1951; Libby, 1954. Also see Münnich, Östlund, and de Vries, 1958, for correction of Chicago dates.) The list as a whole offers little comfort to the proponent of any correlation, for the dates range from those suggesting a correlation earlier than that of Spinden's to one later than that of Thompson's.

The fact of the matter is that it is open to question whether the radiocarbon method of dating in its present state of development is sufficiently exact to solve the problem of correlating the Maya and Christian calendars, or to deal very adequately with what appears to be the potentially rather precise chronology contained in the native records and early Spanish accounts concerning pre-Columbian Yucatan. The inherent uncertainties, the chances of errors, the yet to be resolved corrections have been stated by competent authority (e.g., Johnson and others, 1951; Broecker and Kulp, 1956; de Vries, 1958; Broecker and Olson, 1959; Deevey, Gralenski, and Hoffren, 1959, p. 166; Broecker, Olson, and Bird, 1959), and it behooves the archaeologist to understand these limitations and to be highly critical in his use of radiocarbon dates, not to mention being extremely selective in choosing samples for testing that are quite secure in his own chronological sequence or at least in their archaeological associations. Happily, this method of dating has made progress toward greater exactitude during the decade it has been in use, and there is hope that it will be a tool of increasing importance to those fields of archaeology that deal with relatively recent times. It has already accomplished the important result of reopening the Maya correlation question, which was in a fair way to become a closed-door situation a few years ago.

In regard to the specific problems of the chronology of Mayapan and of Mexican stage Yucatan, we do not think that the chronology advanced by Roys, Thompson, and Brainerd should at present be discarded because of certain radiocarbon dates. Parenthetically, any revision such as that indicated by the radiocarbon date from Chichen Itza would necessitate a change in existing ideas about Toltec chronology in the valley of Mexico and of certain phases of chronology elsewhere in Middle America. We do consider, on the other hand, that the dates cited from Uxmal, Chichen Itza, and Mayapan, which are consistent within themselves, are of sufficient importance to dictate that we carefully watch for future developments in the radiocarbon method of dating (see particularly de Vries, 1958; Broecker and Olson, 1959; Broecker, Olson, and Bird, 1959).

We have spent some pages discussing the history and the general archaeological background of Mayapan and post-Classic Yucatan, or the Mexican stage according to Brainerd's terminology. In doing so we have given particular attention to chronology, and we have to some extent compared Roys' ideas with those of other writers on the subject. Our discussion has been somewhat diffuse, and possibly we should pull the loose strings together. Roys' ideas of history, which are outlined on page 4, and which will be found in detail in part 1 of this volume, are based primarily on documentary sources. His interpretation of the early Spanish writings and native records, which differs in several respects from the ideas of Thompson and Brainerd (see pp. 6-7), seems to this writer eminently reasonable, and in no essential respect is it in conflict with the archaeological evidence. A relatively minor addition to Roys' history is the possibility that the principal occupation of Mayapan began several decades before the "founding" of the city by Kukulcan. A thought that must remain purely speculative in the light of our present knowledge is that an Itza settlement existed at Mayapan before the establishment of the capital, a circumstance that might in part explain the selection of the site by Kukulcan and his Itza followers.

Thanks to the work of R. L. Roys (1957), we know a fair amount about the political geography of northern Yucatan at the time of the Spanish Conquest, when the country was divided into some sixteen native states or provinces. We do not know, however, how closely these provinces corresponded to the divisions of the former joint government of Mayapan, and there is considerable uncertainty about the geographical extent of the hegemony of the capital. Gaspar Antonio Chi and Cogolludo imply that the whole country was under the rule of that government, which seems to be something of an exaggeration. Roys sets forth the documentary evidence on this subject in part 1 of this volume. In brief, he believes that Mayapan probably exerted control over the native provinces that extended from Ah Canul on the west to Cupul, Tazes (Tases), and Cochuah on the east, with at least friendly relations with, if not control over, Uaymil and Chetumal to the southeast (see part 1, map). Chikinchel on the north coast seems to have been outside the Mayapan orbit, and there is nothing to indicate that Ecab was under that jurisdiction, although it is vaguely connected with the Itza in earlier times. The island of Cozumel is clearly associated with Mayapan, but just when and in what manner is not clear. Canpech and Chanputun, the latter the legendary home of the Itza at an earlier time, if we are correct in interpreting Chakanputun as Champoton, do not seem to have come under the power of the Mayapan government.

It may be of some interest at this point to mention what is known of the distribution of archaeological remains similar, or at least comparable, to those at Mayapan. Although materials of this sort can hardly be expected to determine political boundaries, they reflect trade and cultural exchange and give us some idea of the area in which Mayapan may have been an influence. Parts 2, 3, and 4 of this volume give much attention to indications of trade and cultural influences between Mayapan and other areas. The studies by Berlin (1956) on Tabasco and by Sanders (1960) on Quintana Roo relate the findings in those regions to those at Mayapan. R. E. Smith's monograph on the pottery, now in preparation (see Preface), will continue this procedure, and all these studies refer to earlier work along such lines. Here we shall simply outline the geographical areas that may in one way or another be associated with Mayapan on the basis of the archaeological remains, leaving the detailed exposition of such associations to the abovementioned reports.

From what we now know of the archaeology of northern Yucatan and adjacent areas, the ruins along the coast of Quintana Roo and on the offshore islands, from the region of Cape Catoche to Chetumal Bay (see frontispiece), in the ancient provinces of Ecab, Cozumel, and Uaymil, are most closely comparable to the remains at Mayapan. Not only is there a greater range of cultural traits similar to Mayapan there than elsewhere, as well as instances of trade between the two regions, but it is the one sizable area in which remains of this sort are known to be widespread. The little that we know of the interior of Quintana Roo, only a handful of sites being represented in the provinces of Ecab and Cochuah, suggests that this cultural area carries inland, but how extensively we do not know. South of Chetumal Bay, in the old province of Chetumal in northern British Honduras, which also is archaeologically little known, there are indications of somewhat similar remains. As this eastern culture appears to be more deeply rooted in time and to have more direct continuities with earlier forms than the Mayapan equivalent, it is probable that the origin of a good part of what is typical of that city is to be sought for in Quintana Roo.

At Chichen Itza, in the province of Cupul, a considerable amount of pottery typical of that of the major period at Mayapan has been found under conditions suggesting that the great civic and religious buildings of the old Maya-Toltec city were no longer in use and may even have been falling into ruin. It is not surprising, then, that there are few remains of buildings at Chichen Itza that are characteristic of Mayapan. Conversely, however, the early religious architecture of Mayapan, particularly those buildings given over to the cult of Kukulcan, seems to have been inspired by the Maya-Toltec architecture of Chichen Itza.

Closer to Mayapan in the provinces of Mani and Chakan, minor excavations and surface collecting have produced pottery of Mayapan type at a number of sites but few building remains except in the immediate neighborhood of that city. Intensive excavation is now being carried on at Dzibilchaltun in the province of Cehpech, and we understand that remains characteristic of Mayapan are present in some quantity, but we have no detailed information on this situation.

That part of the west coast of the peninsula that lay in the old province of Ah Canul is archaeologically little known but for the island of Jaina and for collectors' pieces reputedly from the island of Piedra and the ruins of Huaymil. We know of no remains of the sort that interest us here from that region. At Champoton, in the province of Chanputun, on the other hand, there have been found pottery and a few other objects that suggest a culture similar to that at Mayapan. Lastly, in central Peten, in the old Itza province, at Lake Yaxha, Lake Peten, and Tikal, and at Barton Ramie on the Belize River in British Honduras, there have been recent finds that may prove in some sense to be related to the culture of Mayapan, but too little is known to say more than that.

The broad area outlined, albeit very spottily, by the foregoing distribution of archaeological remains is approximately that referred to by the native chronicles in reciting the history of the Itza. It is also the general area of Yucatec Maya speech, at least at the time of the arrival of the Spanish. We shall shortly refer to the relations of Mayapan with a wider world, but for the moment let us discuss what might be thought of as the homeland of the lowland Maya in this late period of aboriginal history.

In the first place, to borrow a phrase from statistics, we are impressed by the "weighted" nature of our sample. The distributions we have outlined largely reflect the particular locations and areas where archaeological work has gone on. There is, however, one major exception to this. The so-called Puuc region, including and lying south of the range of hills known by that name, has been relatively well explored. Only the barest traces of the late culture comparable to that at Mayapan have been found, and it seems that this area was largely abandoned at this time. There is fair reason to believe, on the other hand, that the entire northern plain and the coastal regions as far south as Chetumal Bay on the east and Champoton on the west will yield late remains more or less similar to those at Mayapan once there is adequate archaeological exploration. Whether this will prove to be so or not, the obvious trade between Mayapan and the coast, as witnessed by a considerable amount of material of marine origin at the site (see part 4 and Current Report 41) and the unquestionable trade in salt, shows that the city was in cultural contact with coastal areas, and presumably with the northwest or west coasts, as a product like fish, and very likely salt, would probably be brought from as near by as possible. We cannot be certain that the ruins in British Honduras and the recent finds in the Peten will prove to be of the same time as those at Mayapan. We know that the Chetumal Bay area was on the route of trade between northern Yucatan, British Honduras, and farther south, which suggests that the region south of the bay may have been within the same cultural sphere as Mayapan. In the matter of central Peten, on the other hand, the existence there of a group of Itza until the end of the seventeenth century leaves the dating of late remains open to much uncertainty.

Another point that emerges from the distribution of the archaeological remains, and what we know of their relative chronology, is how well, in broad outline, they fit the situation implied by the documentary history. It will be remembered that the Itza left Chakanputun toward the end of the twelfth century, moved to the region of Lake Peten, "discovered" Bacalar near Chetumal

Bay, continued up the east coast of the peninsula, and settled at Chichen Itza within the space of about forty years. Some forty years later Mayapan is "founded," and around the middle of the fifteenth century, at the time of the fall of the joint government at Mayapan, some of the Itza return to Lake Peten. Too little is known of the recently discovered remains in the region of Lake Peten to guess whether they might represent the passage of the Itza on their way north or the much longer occupation several centuries later. The movement of these people from the east coast to Chichen Itza and from there to Mayapan, however, quite accurately parallels the flow of culture as suggested by the archaeological remains.

We do not think that much can be inferred from the archaeology in regard to political geography. It is amply clear that trade and culture can cross political boundaries, even hostile boundaries. The relative homogeneity of the late culture of the ancient province of Ecab certainly in no way conflicts with the idea of its being a political entity. There was certainly much cultural exchange between this province and Mayapan, and presumably most of the country west of Ecab, but whether the latter was under the suzerainty of Mayapan there is no telling. The same holds true of Cozumel. We know virtually nothing of the archaeology of the supposedly hostile province of Chikinchel. The similarity of the late culture of Uaymil, and possibly of Chetumal, to that of Ecab and of Mayapan has been pointed out, but again political affiliation cannot be assumed from this. We have hazarded the guess that all the northern plain and a considerable stretch of the west coast will produce remains of the same general character as those from Mayapan, but until this is proved or disproved, further speculation is not merited. There is, however, one last bit of archaeological evidence bearing on the political geography. The virtual absence of remains in any way associated with Mayapan from the region of the Puuc seems clearly to remove this area from having been a part of the Mayapan confederacy. It appears to all intents and purposes to have been abandoned at that late date.

A little way back we referred to the relations of Mayapan with a wider world than the stage upon which Itza history was enacted or the area of Yucatec Maya speech. Roys mentions the well established trade from northern Yucatan through the region of Chetumal Bay that seemingly took men of Mayapan at least to the north coast of Honduras. Other avenues of trade are seen in the archaeological remains. One of the best documented is that from extreme western Campeche and eastern Tabasco to northern Yúcatan. This is witnessed by the principal trade ware at Mayapan and in Quintana Roo, a pottery known as V Fine Orange, the place of origin of which has been determined by Berlin (1956) as being the area mentioned above. Whether this trade moved primarily by water or land we cannot at present say. The relations of Mayapan with this southwestern region, however, are nicely confirmed by Landa's statement (see part 1) that the Cocom brought mercenary troops from Xicalango into the city. With the completion of R. E. Smith's study of the pottery of Mayapan (see Preface), other ceramic wares that indicate trade with distant regions may be identified, but for the present we shall content ourselves with the mention of V Fine Orange.

The environment of the northern Yucatan plain lends itself particularly to the identification of materials other than pottery that are of foreign origin. The native limestone bears nodules of flint, and there are of course deposits of clay, but few other rocks or minerals that seem to have been of use to art and industry are known to be native to northern Yucatan. There is also no metal. Imported objects, or at least objects of foreign materials, are thus relatively easily recognized. This is a subject that is presented in part 4 of this volume.

Unfortunately, the study of artifacts other than those of pottery has by no means kept pace with the study of the ceramics and of the architectural and sculptural remains in Middle America. This is probably true for a variety of reasons, but at any rate the lack of comparative material and the very slight knowledge of the geology of the area make work of this sort particularly difficult. In spite of this handicap part 4 is illuminating in showing the extent of trade and, parenthetically, is highly suggestive of what could be learned of the life of the people from their tools and utensils. We find that implements of lava, sandstone, schist, and granitic stone at Mayapan probably were not articles of regular trade but had drifted in piecemeal and sporadically. The same is true also of the none too plentiful examples of jade and occasional pieces of basalt, rock crystal, quartzite, and iron pyrites. Greenstone celts, on the other hand, seem to represent an established trade with the Guatemala highlands, either directly or by intermediary coastal ports. Obsidian, almost entirely of the gray variety, was brought to Mayapan in large quantities, seemingly as raw material to be worked into final form by local craftsmen. The almost complete absence of green obsidian, quite common at Maya-Toltec Chichen Itza, and presumably coming from the Mexican highlands, suggests that the obsidian trade, like the trade in greenstone celts, was with Guatemala. This is slightly puzzling, as green obsidian was in use in Tabasco at this time and we know of the well established trade in V Fine Orange between that region and Mayapan. Metal seems to have reached Mayapan by indirect trade, some of it from quite long distances. We do not know enough yet about the distribution of ores, techniques of manufacture, and styles of handicraft to place the source of most objects of this material with any certainty. The few examples of gold that were found at Mayapan suggest an origin as far south as lower Central America or even beyond. The most likely sources of the copper are Honduras and Oaxaca.

Besides the more conventional products of commerce and travel, of which, unfortunately, we have only the imperishable materials, there are the less tangible evidences of communication with relatively distant areas. This matter of cultural exchange, within a more restricted region and in more intensive form, was of course implicit in our review of areas with archaeological remains similar to those at Mayapan. Part 4 is replete with comparisons of artifacts found at Mayapan with those from other regions, some as distant as Nicaragua and Jalisco. In our present state of knowledge it is impossible to say whether many of these likenesses are significant, but when similar studies are made of the remains of other places, some of the comparisons will become meaningful.

The bow and arrow at Mayapan, as witnessed by the presence of arrowheads, is clearly the introduction of a foreign trait. Historically, this is attributed to the Mexican mercenary troops reputedly brought to Mayapan from Tabasco. The small sculptures known as altar figures and the effigy censers that occur in such quantities at Mayapan are not old Maya traits. A number of the gods portrayed on the censers are non-Maya and seemingly of Mexican origin (see Current Report 40). The temples shown in a wall painting at Mayapan are a mixture of the Maya architectural style with a style reminiscent of the Aztec. A few sculptures bear the mark of Aztec art. Broadly speaking, there is a distinct overlay of foreign culture, not always specific but broadly "Mexican" in character, at Mayapan. This does not of necessity imply direct communication with the valley of Mexico. Indeed, there are indications that these influences came secondarily from some such intermediate regions as Tabasco and Vera Cruz, not to mention the near-by area of Quintana Roo, the remains of which also exhibit much that is Mexican in flavor. In sum and total we find, as evidenced by objects of trade and by foreign cultural traits, that Mayapan was in touch, often through intermediary peoples, with a number of quite distant regions. The inhabitants of the city must have been aware of a world much larger than the ancient homeland of the northern Maya.

In the preceding discussion, which has tended to look at Mayapan as a part of the larger scene, one may have gained the impression that all trade, all currents of culture, flowed into the city and only governmental authority issued forth. As a matter of fact that is very much the way the situation appears in our present state of knowledge, although a better understanding of some other communities of this time in northern Yucatan might alter the picture. Still, when one thinks of Mayapan as an urban capital, dependent on the provinces for its support, the picture is not altogether unreal, and it is in no way in conflict with Landa's statement about the subsistence of the city (see part 1, p. 57). At all events, this brings us to a closer inspection of the character of the ancient capital and of its culture, which is the subject of parts 2, 3, and 4 of this volume.

What was to become the most important city of the Maya in its time seems to have begun as a minor ceremonial center for the worship of Kukulcan. The main pyramid-temple was probably a copy on a smaller scale of the great temple to Kukulcan, or Castillo, at Chichen Itza, and the other buildings of this small group also very likely imitated those of Chichen Itza in design and function. It will be remembered that Landa attributes the establishment of Mayapan to Kukulcan, who had previously reigned at Chichen Itza (see part 1, pp. 56-57), and the same writer goes on to describe the building of the temples and the houses of the lords within a walled enclosure and the subsequent building of houses for the people outside the wall. With the exception of the walled enclosure, no trace of which has been found, and which Landa, who probably never visited Mayapan, seems to have confused with the great wall around the city, this description is nicely paralleled by the archaeological findings. The oldest part of the city, as just indicated, does seem to be the main ceremonial and civic center, and, though there is no reason to believe that all construction there was completed before any houses were built outside the center, the residential areas seem to have been a later development.

Over the century and a half or two centuries following the building of the small ceremonial group we have just mentioned, Mayapan grew to be a city of 11,000 to 12,000 inhabitants that covered an area of more than 4 square kilometers and was enclosed by a massive, though not very high, stone wall. The population lived in more than 2000 dwellings, made use of almost as many more domestic buildings, and worshipped and carried on their affairs in well over 100 ceremonial structures. Much in the manner of the typical town described by Landa (see part 3, p. 205) the main group of temples and other religious and civic buildings lay near the center of the city. Close to this center were most of the residences of the lords and important people, while stretching out over the remainder of the city were the houses of the less well-to-do. Other than this arrangement in zones of importance, there was no city planning in a present-day sense. Favorite locations of dwellings were on the many natural rises that dot the site, so that the distribution has a random appearance (see map in back cover pocket). Houses and groups of houses, the family unit, were almost invariably surrounded by rough stone walls, more or less circular in plan, that marked the limits of the particular property. As these were often closely adjacent, the result was a maze of alleyways twisting all through the city. With the exception of three formal causeways, probably more ceremonial than utilitarian in nature, and several straight lanes bordered by stone walls, there were no streets in a modern sense. There were, moreover, no obvious roads that led toward the center of the city from the dozen entrances in the city wall. Topography and water supply seem to have been the determining factors in the arrangement of the city, the most crowded part being in the southwest, where water was in most ample supply.

This, then, in briefest sketch, was Mayapan, an experiment in urbanism, and possibly in form of government, that seems to have been new to the Maya. Landa tells us that the end of the city came through political dissension caused by oppression on the part of the ruling group, and the native literature speaks of fighting, seizure, and depopulation (see part 1). That the end was abrupt and drastic is attested by ample evidence of burning of buildings and widespread looting. Whether or not the city was literally depopulated and abandoned, we do not know. As two of the chronicles (see part 1) mention a "pestilence" that seems to have occurred at Mayapan in a Katun 4 Ahau (A.D. 1481-1500), some of the people may have continued to live there after the fall of the capital. There seems no reason to doubt, however, that the importance of the city as a center of government had ceased some forty years earlier.

To see the culture of Mayapan and of late pre-Columbian Yucatan in perspective, we must remember the civilization of earlier centuries. Apparently referring to a time before the establishment of the capital at Mayapan, Landa mentions the rule of three brothers at Chichen Itza, their deaths, and the dissension that followed (part 1, pp. 56-57). There are also a number of allusions in the native chronicles to disturbed conditions at this time (see part 1). These seem to refer to the aftermath of the breakup of Toltec rule at Chichen Itza. In any event, the archaeological remains indicate a drastic decline in level of civilization, and reflect what might be expected in times of turmoil and the breaking down of old religious, and very probably social, forms.

It has been mentioned that the early buildings at Mayapan very probably imitated those of Chichen Itza, and this influence, mainly expressed in the cult of Kukulcan, carried on in the new city for some time. There was, however, a vast difference in execution. The magnificent Classic tradition of the Maya had, of course, long since disappeared in anything like its pure form, but a part of that tradition had survived through sheer impetus, or a sort of hybrid vigor, or even perchance because the two cultures were in part contemporaneous, in the imposing architecture, powerful sculpture, and excellent ceramics of the Maya-Toltec civilization of Chichen Itza. Now that too was gone. Civic and religious buildings were smaller in scale, less massive in design, and the lofty stone vaults of the great structures at Chichen Itza were all but forgotten, being replaced by flat-ceilinged beam-and-mortar roofs. There was no fine cutting and shaping of stone for building or for sculpture. Indeed, the stone itself was selected with little care, most of it being of inferior quality. Poor masonry was hidden by quantities of plaster, and there was the tendency to resort to modeling in stucco in place of carving in stone. Such stone sculpture as there was seems for the most part to have relied on stucco and paint for the final effect, and, even allowing for the present eroded condition, there appears to have been little of artistic merit. Pottery and the products of the lesser arts and industries were almost without exception of poor quality. Mayapan was born when civilization was in eclipse, and, in spite, or perhaps because, of the numerous foreign influences that moved across the peninsula and filtered into the city, culture never again approached the excellence of earlier centuries.

As might be expected in times of this sort, religious and social values were changing. This trend is not only seen in the literature, in the outcry against the Itza in the native chronicles, but is also reflected in the archaeological remains. A case in point is the great number of shrines and the prevalence of the family oratory, accompanied by altar figures and effigy censers, that surely indicate the breaking-down of the old centralized religious organization, the growth of cults, of which ancestor worship was conspicuous, and the transference of much of ceremonialism to the private dwelling, or "the rise of secular forces at the expense of sacerdotal control, a vulgarization of the spiritual aspect of religion," as Thompson puts it (Current Report 40, p. 624). The mention by the early Spanish writers of the worship of idols and the introduction of idolatry by Kukulcan and the Mexicans, apparently a custom foreign to the old Maya culture, almost certainly is in reference to the effigy censers and altar figures, many of which are of non-Maya deities and are otherwise non-Maya in character. That the age was materialistic, that personal comfort and glory came ahead of religious devotion, is shown by the palaces and finer residences being better built and apparently more lavishly furnished than the temples and other ceremonial buildings. Dedicatory or ritual offerings were often retrieved from their resting places, presumably to be used again. Human sacrifice on a considerable scale was practiced, and may well be a reflection of the taking of captives, slavery, and the rise of militarism that seemingly marked this era.

Much of the change that went on was undoubtedly due to the impact of foreign peoples and foreign customs, a process that had gone on at least since the advent of the Toltec some centuries earlier. At the same time there seems to have been an internal dry rot in Maya culture that cannot be explained solely by the importation, or even the domination, of foreign ideas. How much of this is attributable to the disruption of invading peoples, how much to the degenerative process of a civilization that has flowered and reached old age, we cannot say, but the collapse of the brilliant civilization of the southern Maya at the end of the Classic period, apparently without external pressures, gives us food for thought. One might consider the possibility that the advent of the Toltec in Yucatan, rather than bringing the downfall of the old Maya culture, a theory that has often been advanced, on the contrary prolonged it in something like its old vigor, and that only with the collapse of Toltec power did the inherent decadence of Maya civilization become fully apparent. However we sort out the causes, or chart the course, of decay, it is quite clear that Mayapan fell heir to an impoverished culture. Over its life the city was subjected to numerous outside influences, but instead of finding a stimulus in them the result was a sterile eclecticism, a culture without vitality.

One of the primary reasons for embarking upon the program of research that is reported on in this volume was the availability of a body of early literature, both native and Spanish, that it was hoped could be brought into combination with the archaeological evidence to produce a more detailed, more vivid, more lifelike picture of a bygone civilization than archaeology alone can provide. This was far from being a new thought in the practice of archaeology, but the existence of native texts is rare in the New World, and here was what seemed to be a bright opportunity. As the field seasons rolled by, however, I had many unhappy moments in the thought of how little the remains contributed to the definition of historical events or the exposition of historical text in general.

Now that the work is over and the results are presented here, I feel much better. In succeeding pages the reader will find numerous references to Landa and to other documentary sources as they pertain to the archaeological findings. Many of the findings, probably the majority, confirm the historical records; some disprove them. Not so many years ago I remember discussing on more than one occasion Landa's description of the typical native house. Nothing resembling it had ever been found, and the discussion usually was concerned more with where Landa went wrong in his description, or what he really meant, than with the question whether houses of this form had ever in fact existed. They have, of course, now been found in large numbers at Mayapan, and we have a much better idea of exactly what Landa was describing. This is but a simple example of the confirmation of written record, of its further elucidation, by the archaeological remains and of the gain in understanding that comes from the combined approach.

Looking at the results of the work as a whole, I think it has been worth while, even though we were dealing with a degenerate civilization, devoid of great art, that to all intents and purposes reached a dead end in the Spanish Conquest. Certainly there is no ancient center of the Maya about which we know as much as we do about Mayapan, and this understanding comes nearer to being living history, inadequate as it is, than is true of any other place.

Postscript

Since the preceding pages were written, and have gone to press, two new radiocarbon dates from Chichen Itza have been published. The first of these (Y-626 bis) is a second measurement of the Early Mexican substage specimen (Y-626) previously reported. The new date, A.D. 820 ± 100, is not significantly different from the earlier figure. A specimen (LJ-87) from a Florescent stage building at Chichen Itza is dated A.D. 820 ± 200. This is quite close to the hieroglyphic date from that building which is read by J. E. S. Thompson (1937, pp. 181, 186) as 10.2.10.11.7 in the Maya calendar or A.D. 880 by the Goodman-Martínez-Thompson correlation, and the radiocarbon date of course supports that correlation. (See Stuiver, Deevey, and Gralenski, 1960; Hubbs, Bien, and Suess, 1960, for above radiocarbon dates. Also see Rubin and Alexander, 1960, p. 181, in connection with previous reference to Crane and Griffin, 1959.)

An important, but as yet unpublished, paper announcing a series of radiocarbon dates from the Classic ruins of Tikal in Guatemala was recently presented by L. Satterthwaite at the annual meetings of the Society for American Archaeology, held at New Haven in May, 1960. This paper reportedly does much to confirm the validity of the Goodman-Martínez-Thompson correlation. Until the writer has the opportunity to see this paper he is unable to comment further.

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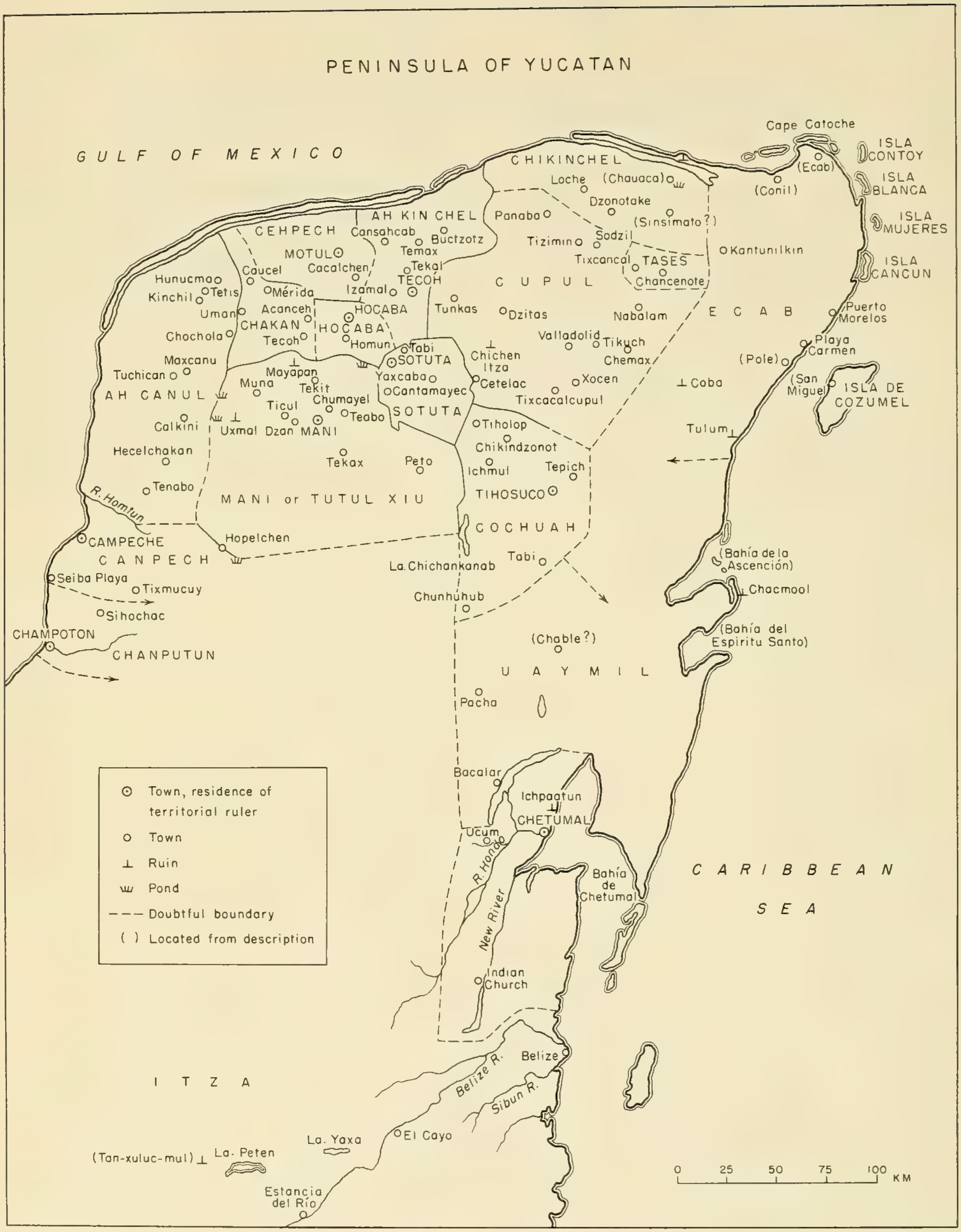

PENINSULA OF YUCATAN

GULF OF MEXICO
CHIKINCHEL
Loche
(Chauaca)
Dzonotake
(Sinsimato?)
Panaba
Tizimin
Sodzil
Tixcancal
TASES
Chancenote
AH KIN CHEL
Cansahcab
Buctzotz
Temax
Tekal
TECOH
CEHPECH
MOTUL
Caucel
Cacalchen
Izamal
Hunucmao
Kinchil
Tetis
Mérida
Uman
Acanceh
HOCABA
CHAKAN
HOCABA
Tecoh
Homun
Tabi
SOTUTA
Chochola
Maxcanu
Tuchican
AH CANUL
Mayapan
Muna
Tekit
Ticul
Chumayel
Teabo
Yaxcaba
Cantamayec
SOTUTA
Calkini
Uxmal
Dzan
MANI
Hecelchakan
Tekax
Peto
Tenabo
R. Homtun
MANI or TUTUL XIU
CAMPECHE
CANPECH
Hopelchen
Seiba Playa
Tixmucuy
Sihochac
CHAMPOTON
CHANPUTUN
C U P U L
Tunkas
Dzitas
Nabalam
Valladolid
Tikuch
Chichen Itza
Chemax
Cetelac
Xocen
Tixcacalcupul
Tiholop
Chikindzonot
Ichmul
Tepich
TIHOSUCO
COCHUAH
Tabi
La Chichankanab
Chunhuhub
(Chable?)
U A Y M I L
Pacha
Cape Catoche
(Ecab)
(Conil)
ISLA CONTOY
ISLA BLANCA
ISLA MUJERES
Kantunilkin
ISLA CANCUN
E C A B
Puerto Morelos
Playa Carmen
(Pole)
(San Miguel)
ISLA DE COZUMEL
Coba
Tulum
(Bahía de la Ascención)
Chacmool
(Bahía del Espiritu Santo)
Bacalar
Ichpaatun
CHETUMAL
Ucum
R. Hondo
New River
Bahía de Chetumal
CARIBBEAN SEA
Indian Church
Belize
Belize R.
Sibun R.
I T Z A
El Cayo
La. Yaxa
(Tan-xuluc-mul)
La. Peten
Estancia del Río
0 25 50 75 100 KM
Town, residence of territorial ruler
Town
Ruin
Pond
Doubtful boundary
( ) Located from description

PART 1

LITERARY SOURCES FOR THE HISTORY OF MAYAPAN

Ralph L. Roys

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I. INTRODUCTION

The purpose of this study is to furnish historical narratives and other material pertaining to the history of Mayapan in colonial Spanish and Maya literature. The former consist of accounts by the Indians related to the Spaniards; the latter are taken mostly from the Books of Chilam Balam, written in Maya but in Spanish script.

These books contain the so-called Maya Chronicles. Although they are indispensable, J. E. S. Thompson has pointed out that their chronology is very often misleading and that they were probably compiled by seventeenth-century native writers from historical allusions in the prophecies and from current popular beliefs. By this time these popular beliefs would, on the whole, have become more confused than the narratives of a century before, many of which had been related by Indians who had grown to manhood at the time of the Spanish Conquest. Consequently I have placed more faith in the chronology implied by the better sixteenth-century accounts than in that of the later compilers of the Maya Chronicles.

The Christian dates presented in this study are based on the Goodman-Martínez-Thompson correlation, according to which the Katun 13 Ahau of the Spanish Conquest ended in 1539. The correlation by H. J. Spinden, however, puts the end of this katun in 1536. If that interpretation is to be accepted, it will be necessary to set back all the dates given here for events in post-Classic times and make them three years earlier.

For Initial Series Maya dates, however, the difference between the two correlations amounts to about 259 years. In this study I have cited only one Initial Series date, 10.3.0.0.0, 1 Ahau, which I have equated with the Christian date A.D. 889. According to the Spinden correlation this Maya date would have fallen about A.D. 630.

It is now generally believed that the Maya-Toltec city of Chichen Itza, with its numerous elements of Tula-Toltec culture, could hardly have been founded much before A.D. 900. Consequently the Spinden correlation would appear to imply a passage of at least 259 years from the erection of the latest dated monument to the foundation of Maya-Toltec Chichen Itza.

II. THE SOURCES

Since this study is primarily a presentation of our sources for the traditional history of Mayapan, it is of interest to know what they are and how they came to be written.

The earliest informant in regard to the history of the Yucatecan Maya appears to have been Gaspar Antonio Chi, often known among his Spanish contemporaries as Gaspar Antonio Herrera. Since he was described in 1581 as "a man aged fifty years, more or less," he was probably born about 1531; and he was still living in 1610 (Relaciones de Yucatán [hereinafter cited as RY], 1:264; Tozzer, 1941, p. 45). His father, Napuc Chi, a pagan priest, was one of a party of Xiu dignitaries who were murdered by Nachi Cocom in 1536 while they were passing through the Province of Sotuta on a pilgrimage to Chichen Itza. Gaspar Antonio's mother was Ix Kukil Xiu, a member of the ruling family at Mani. He was educated by the missionaries. As he came of a Mani family, this association seems unlikely to have begun earlier than 1548, when the Franciscans first established themselves in that region. At this time he would have been about 17 years old, an age when we should expect a Maya boy of noble family and the son of a priest to be already educated in the history and traditions of his people. His later career bears evidence of a scholarly mind.

"He spoke Spanish as well as any Spaniard," and also had some knowledge of Nahuatl. He was an organist in the church, taught the children of the conquerors Spanish and Latin grammar and music, and later became Interpreter General of Yucatan. We also have his statement that he wrote a Maya grammar and some sermons for the missionaries to preach to the Indians (Tozzer, 1941, p. 45).

Besides being one of Diego de Landa's principal informants, Gaspar Antonio was joint author of a number of reports written in 1581, which have been published under the title Relaciones de Yucatán. It is here that we find most of the important historical information for which he became famous. His own report, dated 1582, tells us little of the actual history of Mayapan, but it contains an important account of the political and social organization and the laws, customs, and economy of the capital during the last years of its existence (Tozzer, 1941, App. C). Gaspar Antonio's reliability as a historian can be impugned only on two really important points. The first is his exaggeration of the importance of the Xiu family. He claimed that it headed the joint government at the capital, but Landa more properly ascribes this position to the Cocom. The other is that Mayapan fell about the year 1420. We have excellent reason to believe that it was between 1441 and 1461; and Landa strongly implies that the event occurred about 1446 (Tozzer, 1941, pp. 38, 230).

Much of our knowledge of sixteenth-century Yucatan is derived from the documents known as Relaciones de Yucatán. They consist of 25 reports from eastern Yucatan and 25 from the west, written in 1579 and 1581 by encomenderos residing in the Villa of Valladolid and the City of Merida, but including one report by the municipal government of each of these two towns. Only the 1581 series is of importance for the history of Mayapan, and for much of this information we are indebted to Gaspar Antonio. These reports consist of the replies to a list of 50 questions in regard to the towns held by the encomenderos. The questionnaire covers the physical, political, and economic geography of the region and town as well as the customs, clothing, weapons, and wars of the inhabitants; but for our present purpose the most important inquiry is the following: "[No.] 14. To whom they belonged in the time of their paganism; what the seigniory was which their lords held over them; what they paid in tribute; and what were the religion, rites, and customs, good or bad, which they had" (RY, 1:30). The replies to this question, as we shall see, resulted in a very considerable amount of historical information, some of it going far back into the past.

The earliest and indeed the best account of the pre-Spanish Maya is that of Diego de Landa; it includes much of what we know of their history. Landa was born in 1524. He joined the Franciscan Order at the age of 16, and came to Yucatan in 1549. Returning to Spain in 1563, he wrote his report of the Maya about 1566. In 1573 he came back as Bishop of Yucatan; and he died there in 1579. We find in his book a sympathetic attitude toward the natives which was long considered inconsistent with his stringent and sometimes harsh measures against idolatry. However, through the publication by Scholes and Adams in 1938 of the court records of his inquisition we learn that he was prosecuting ritual murder as well as idolatry. As late as 1562 human sacrifice, mostly of children, was still being performed, sometimes in the new Christian churches. Landa knew Maya life as it had been in pre-Conquest times. He arrived in Yucatan several years before the reforms of Tomás López Medel, who inaugurated the civil congregation and laid the groundwork for a complete reorganization of local government in 1552. Indeed, conditions were still such that Landa had difficulty preventing the sacrifice of a youth of 18 before an audience of more than 300 spectators. This was at Dzitas, not far from Chichen Itza, and on the main route from Merida to Valladolid (López de Cogolludo [hereinafter cited as Cogolludo], 1867-68, bk. 5, ch. 14). Our present manuscript of Landa's report is not complete; but a number of details that have been omitted seem to be supplied by Herrera y Tordesillas, who apparently had access to the original work (Tozzer, 1941, pp. viii, 213-20).

Another prominent early Franciscan writer was Antonio de Ciudad Real, who was born about 1551, came to Yucatan in 1573, and died in 1610. He wrote a long narrative of travel in Mexico, Central America, and Yucatan during the years 1584-88, which is invaluable for its extensive ethnographical information and which contains the earliest detailed description of the ruins at Uxmal. He has also been identified as the author of the great Motul dictionary, our best and most complete source for the sixteenth-century Maya language of Yucatan. Although he tells us little of the history of Mayapan, he does give a brief but convincing statement that the Cocom ruler, and not the Xiu, was the head of the joint government at that capital until the time of its destruction (Roys, 1932; 1952a, pp. 420-22).

Sánchez de Aguilar (1555-ca.1648), who was born in Yucatan, wrote much about the Maya, but he makes only one important statement about their history. He tells us (1937, p. 140): "We find that during their paganism they were as much concerned with government and as law-observing as the Mexicans, whose subjects they had been 600 years before the arrival of the Spaniards."

The Valladolid lawsuit of 1618 is an important source for the intrusion into eastern Yucatan by a group of foreigners reported to be Mexicans (Brinton, 1882, pp. 114-18). This document is evidently part of a probanza (proof) of noble status presented by one of the local Indian hidalgos. Here a brief account of the famous Cocom family of Mayapan and later of Sotuta is of special interest.

In this same year Bartolomé de Fuensalida, a Franciscan missionary, was making a visit to the Itza town of Tayasal, the last important stronghold of Yucatecan Maya civilization. This was at the site of what is now Flores, on an island in Lake Peten in northern Guatemala. We do not know just when he wrote his report, which was copied by Cogolludo about 38 years after the visit; but he was told by the Itza that they had fled there from Chichen Itza in an "age" (katun) called 8 Ahau, 100 years before the arrival of the Spaniards "in these kingdoms." Their reasons for this flight were, first, their prophecies that a people would come from the east and dominate the land, and second, the abduction of the bride during the wedding festivities of a more powerful neighbor. They also indicated roughly the route by which they had come from northern Yucatan (Cogolludo, 1867-68, bk. 9, ch. 14).

This account seems relevant to the history of Mayapan, for the Books of Chilam Balam tell of the conquest and dispersal of the population of Chichen Itza by a halach uinic (territorial ruler) from Mayapan in a Katun 8 Ahau. These books also cite the fear of conquerors from the east, as well as the story of the stolen bride, obscurely linking that tale with Montezuma, which may be significant, if we recall that Montezuma I lived during the Katun 8 Ahau which fell about the middle of the fifteenth century. Nevertheless, opinion has been divided as to whether the migration of the Itza to Tayasal occurred in the Katun 8 Ahau which fell in 1441-61 or in another of the same name which fell 256 years earlier. Fuensalida also discusses the prophecies of the Itza at Tayasal, which, he states, were "in a book like history, which they call Analte [Maya, anahte]. In it they preserve the recollection of whatever has happened to them since they settled those lands." I infer from this that these books of prophecy took the place of the native chronicles in Mexico.

Another authority on the Maya was a Franciscan named Bernardo de Lizana, who came to Yucatan in 1606 and was over 50 years old when he died in 1631. About 1630 he wrote a book dedicated to Our Lady of Izamal. Here he tells much about the religious ceremonies at Izamal, which had been a famous center of pilgrimage, but nothing of the history of Mayapan. Izamal is an enormous archaeological site, evidently covering both the Early and Late Classic Periods. After the fall of Mayapan the Chel established a new local capital at Tecoh, a short distance to the east, and the ancient site was only sparsely inhabited at the time of the Spanish Conquest. Consequently it would appear that Lizana's informants were telling of conditions there during the hegemony of Mayapan; the descriptions seem to be too detailed to go back to Maya-Toltec times, in spite of the great age of the city.

Diego López de Cogolludo's Historia de Yucatán is largely a secondary source for the ethnology and pre-Spanish history of the Maya. Writing in 1656, he had a first-hand knowledge of the Maya of his own time, but he draws heavily on Sánchez de Aguilar and Lizana. He has, however, preserved a number of primary sources, which would have been lost except for him. Among his transcriptions are the Ordinances of Tomás López, Fuensalida's report on the Itza, and the personal report of Gaspar Antonio Chi. It is true that the original Chi manuscript was recently discovered in the Spanish archives by F. V. Scholes, but the document is so badly torn that our knowledge of it would be incomplete without Cogolludo's transcription. Many of the biographical details cited above have been taken from Cogolludo's history.

Still another Franciscan missionary, Andrés de Avendaño y Loyola, gives us a report on the Itza of Tayasal, whom he visited in January 1696, shortly before they were conquered. They were still practically untouched by European influences, except for the possession of a few trade goods such as knives and machetes. He tells us nothing of their history, but he gives an excellent account of their books of prophecy, which supplements Fuensalida's statement and confirms the value of the historical allusions in the katun prophecies that have come down to us from northern Yucatan (Roys, 1954). His account is somewhat brief, and he explains that he has already written a separate treatise on the subject. That work has unfortunately been lost, but it is listed in an eighteenth-century bibliography as "Explicación de varios vaticinios de los antiguos de Yucatán" (Eguiara y Eguren, 1755). It seems possible that it will still be discovered in Mexico.

In addition to the historical accounts related by native informants to the Spaniards, a considerable amount of such material is to be found in the so-called Books of Chilam Balam. These manuscripts were written in the Maya language in European script, and have come down to us from the eighteenth century; but much of their content was copied from earlier manuscripts. In the past they have been best known for the Chronicles that they contain. Here we find recorded a number of historical events and the names of the katuns in which they are said to have occurred. Their chronology is often confused and inconsistent. Much of the material seems relevant to the history of Mayapan or mentions events that led to the foundation of this capital.

Some parts of the Books of Chilam Balam correspond fairly well to the prophetic literature of the Itza on Lake Peten, as described by Fuensalida and Avendaño. It is in the prophecies for the katuns that we find many historical allusions. Some of them can be identified either in Landa's book or in the Chronicles. These katun prophecies have been translated and discussed elsewhere (Mediz Bolio, 1930; Roys, 1933, 1954; Barrera Vásquez and Rendón, 1948; Solís Alcalá, 1949). Apparently the primary reason for these allusions was the belief that whatever happened in a katun of a certain name would recur, in one form or another, in another later one of the same designation. The katun was a time period of 7200 days, a little less than 20 years. Consequently, as Fuensalida noted, these books were like histories.

Apparently these prophecies were still consulted as a guide to the future during much of the colonial period. Even as late as the 1670's bands of fugitives in the south were entering the villages and urging people that according to the prophecies the time had now come for them to leave the Spanish-governed towns and live in the forests.

In addition to the Chronicles and prophecies, we also find in the Books of Chilam Balam several isolated narratives of a historical character, which are quoted or discussed in this study.

III. POLITICAL GEOGRAPHY

López de Cogolludo, bk. 2, ch. 1: "What is certain is that thus the Spaniards found it [Yucatan divided into provinces], when they discovered it; but previously it had been subject to one supreme lord and king, and thus ruled by a monarchical government, until the disloyalty of some vassals caused the division in which it was found; and then all this land was called Mayapan from the name of the principal city, where the king had his court, as will be said further on." [López de Cogolludo, bk. 4, ch. 3.] The last reference is to Cogolludo's version of the Relación of Gaspar Antonio Chi: see Tozzer, 1941, pp. 230-32, for Roys' translation (pp. 64-66 *infra*).

Roys, 1933 (Chumayel), p. 132. Katun wheel: "In [Katun] 2 Ahau at Maya Cuzamil, Mayapan [the katun is established]." In some way the Mayapan government was associated in thought with Cozumel Island. Since the expression is more often corrupted to "*may cu mayapan*," apparently it was being forgotten in later colonial times. I suggest that it is referable to a tradition that the founders of Mayapan had once ruled in Cozumel.

Ciudad Real, Noyes, 1932, p. 314: "Although that land and province is at present called Yucatan, it is not its name, but Maya, and the language, *Mayathan*."

(Ciudad Real, p. 29 *supra*, discusses the political setup at Mayapan.)

For the alleged name Mayab, Brinton (1882, pp. 13-14) shows it to be only a late and vulgar form of Maya.

In one of the prophecies (Roys, 1933, p. 168) is a passage apparently addressing the Itza as "Men of Tantun"; and elsewhere in the Chumayel we read of "Ah Hulneb [the archer god] at Tantun Cuzamil" (Roys, 1933, pp. 3, 66). So there is an association between Cozumel Island and the people who later settled Mayapan. This goes back to Mexican rule at Chichen Itza. Here they are said to have chosen "a certain Cocom to rule in Chichen Itza, and they all obeyed him as lord, and those of Cozumel were subject to him" (Valladolid lawsuit, in Brinton, 1882, p. 117; p. 66 *infra*). This otherwise good authority is a little weak in that it makes the Cocom pass from Chichen Itza to the Province of Sotuta, omitting the well authenticated rule of the Cocom at Mayapan.

The matter is of more than antiquarian interest, since it involves the question to what extent the hegemony of Mayapan extended over the northeast and east coasts of Yucatan. Tulum is on the east coast. The two following reports by encomenderos who held towns in the Province of Chauacha, or Chikincheel, seem pertinent here.

RY, 2:23 (cf. Tozzer, 1941, p.7): "Formerly the Indians of the Province of Chikincheel called those of this Villa of Valladolid, and the other provinces of the Cupuls and Cochuas, *Ah mayas*, despising them as a vile and base people of low understanding and propensities."

RY, 2:43 (cf. Tozzer, 1941, p. 7): "The language which is spoken in this pueblo [Popola, near Valladolid] is called *achmaya*, which means people of contemptible and base intelligence and of little account; this name was given them by the Indians of the province of Chikincheel."

That these Chikincheel people also intended an insult in calling those of the Province of Cochuah Maya suggests, I think, that the Province of Cochuah was formerly a member of the "joint rule" (*mul tepal*) at Mayapan.

Scholes (1943, pp. 181-82) reports that toward the end of the sixteenth or the start of the seventeenth century a Don Juan Chan, cacique and governor of Chancenote, Province of Tazes, a short distance south of the Province of Chikincheel in northeastern Yucatan, was married to Doña Isabel Tzeh, daughter of Don Fernando Tzeh, natural lord of Chancenote and other neighboring towns and "descended from the ancient lords of Mayapan." This boast places this district (Tazes, probably a corruption of Tah Tzeh) in the former realm of Mayapan; and the attitude displayed seems significantly different from that of Chikincheel, where they despised and hated the very name of Maya. The sympathetic tone regarding the Cocom in the Valladolid lawsuit rather suggests that the Cupul province had been subject to Mayapan; now the Chancenote report takes the Mayapan hegemony much farther to the northeast, but we are still in an inland province.

For the east coast of Yucatan north of Ascension Bay we have no historical tradition connecting the area with Mayapan. This region comprised the Province of Ecab and included the site of Tulum, which, according to the ceramic evidence, was at one period contemporary with Mayapan.

Under this name Tulum (Maya, "enclosure" or "rampart") does not appear in the colonial records, but it was apparently the former town of Zama (Maya, Tzama, the name of a late variety of bean). In a 1579 report of this town we read that its inhabitants were persons "of low thoughts and propensities." The report goes on to describe some of the imposing ruins at the site and states that these people were unable to give any account of the builders or for what purpose the edifices had been constructed (RY, 2:197; Roys, 1957, pp. 146-47).

A reference associating the Itza, the alleged founders of Mayapan, with Cozumel Island has already been cited; and a migration legend about these people begins with their arrival at Pole on the east coast. This town, which was the usual embarking point for Cozumel in colonial times, appears on at least two old maps and is believed to have been at the archaeological site named Xcaret (Roys, Scholes, and Adams, 1940, p. 5; E. W. Andrews and L. M. Hewen, communications).

The account in the migration narrative is as follows: "Whereupon they departed [not stating where from] and arrived at Pole [MS, Ppoole], where the remainder of the Itza were increased in number; they took the women of Pole [MS, Ppole] as their mothers" (Roys, 1933, p.70). The narrative jumps from Pole to Ake, the present Dzonotake not far northwest of Tizimin, and no other east-coast site is mentioned.

The Books of Chilam Balam make so little mention of Campeche, or Canpech, in pre-Spanish times that it seems possible that Campeche was not in the Mayapan orbit. It is also possible, however, that the previous hegemony of Chichen Itza, before Mayapan became a ruling city, may well have covered most of the peninsula of Yucatan. At the present time we find the patronymic Itza spread all over the peninsula. It would seem as though it must in some way be referable to the Itza nation, but I can find no direct evidence of such a connection.

The rulers of Mayapan, however, certainly had access to the east coast of Yucatan.

Landa, 1941, p. 39 (hereinafter quotations from Landa will be from the 1941 edition; Tozzer's notes to Landa will be cited as Tozzer, 1941): "The son of Cocom who escaped death [when Mayapan was destroyed] through absence on account of his trading in the land of Ulua [the basin of the Ulua River in Honduras], which is situated beyond the town of Salamanca [de Bacalar], when he heard of the death of his father and the destruction of the city, returned very quickly and joined with his relations and vassals and settled ... in Sotuta Province."

I surmise that the Cocom's point of embarkation was on Ascension Bay.

Ciudad Real, 1932, pp. 324-25 (observations made in 1588 at Ichmul, in the Province of Cochuah): "Twenty-five leagues from Ichmul lies the Bay of Ascension, a very good and large port. . . .it is no more than thirty leagues of dry road from the city of Valladolid . . . merchandise . . . that they [now] carry through Bacalar with great trouble and risk, on account of its distance and swamps and lagoons [could be transported more easily by this route]. . . .

"On the mainland near this bay and port, there are some stone buildings, from olden times, and the Indians say they were temples of the gods and idols of the lords of Chicheniza, and when they went to Honduras for cacao and feathers, and other things, they passed by there going and coming to offer sacrifice to them, and there they embarked and disembarked."

All this no doubt goes back to Chichen Itza during its hegemony, in Tohil plumbate times, but I suggest there were "lords" at Chichen Itza in post-plumbate times, during the hegemony of Mayapan, just as the Spaniards found a powerful Cupul chief at Chichen Itza in the sixteenth century. I suggest that the Ichmul people (who told Ciudad Real this) may actually have been thinking of Mayapan times, rather than the more distant period of the hegemony of Chichen Itza, which ended in the early thirteenth century.

Whether or not the Chetumal Bay region was a part of the Mayapan confederation is very hard to tell. We know that there was a colonial town there named Mayapan in 1582 (Scholes et al., 1936-38, 2:63). I believe this to be the site of an early colonial church, now known as La Iglesia, because it is near the remains of a walled city, which the archaeologists have named Ichpaatun (Roys, 1957, p. 162, map 16). Ichpaatun has been found to be contemporary with the northern Mayapan (Sanders, 1955, p. 287); and its fortification at this time might be considered evidence that it was independent of the northern capital.

Since we find that much of the commerce of northern Yucatan with Honduras at the time of the Spanish Conquest passed through the Chetumal region, relations with the people of that region must have been amicable a good deal of the time. There are a few references to Chetumal in the Maya prophecies, in contrast to the absence of mention of Campeche, which was nearer northern Yucatan. In early colonial times we find an overland trade in cacao between Dzan near Ticul and a place called Chunukum. Presumably this was the present Ucum near the head of Arroya Ucum, a tributary of the Río Hondo (Maya, Nohukum), which must have been in the Province of Chetumal (Documentos de Tabi; Roys, 1957, p. 164, map 16).

The area that later became the Province of Mani was in the jurisdiction of Mayapan; the capital itself lay in it, though near its north border. Before the Xiu crossed the Puuc from Uxmal, where they first settled perhaps about A.D. 1420, the area south of Mayapan may well have been ruled by the Cocom family.

RY, 1:286-87 (Relación de Teabo and Ti-ek): "And of this town the natives say that they find in their old histories that there came forth a captain and noble person named Cacomcat [probably Cocom Coatl; I think that Martínez Hernández suggested this] with some of his friends and went to populate the said town [this does not mean there was not already a town there of Teabo]. And he made in it some houses of stone with vaults, some part of which appears today in the said town of Teabo. For this reason they say that it was populated by very noble people; and at present there are many Indians who boast of lineage in the said town, like the Navotes [Nauats], Ibanes [Euans], and Chumbes [Chunabs], also others who are in the said town who, as they say, are descended in direct line from the old lords which there were in this land." There is still an enormous substructure right in the middle of Teabo; I am sure that it must be very old, perhaps later remodeled.

The evidence is good for putting the Province of Chakan into the Mayapan confederacy. It seems to have been, at the Conquest, a league of the towns of Caucel, Ichcansihoo, Uman, Acanceh, and Tecoh. I am doubtful whether Ichcansihoo (Merida) amounted to much after the fall of Mayapan, until the Spaniards settled there, in spite of the fact that there were enormous ruins at the site.

Of these towns the farthest from Mayapan is Caucel, which was noted for its rich salt beds.

Landa, 1941, p. 189: ''And they were accustomed not to make this harvest of salt without the permission of the lords who in those places had the most right by proximity. And to these all those who came for salt made some small offering, either of the salt itself or of things from their own lands; and since a principal named Francisco Euan, a native of the town of Caucel, proved this, and also proved that the government of the city of Mayapan had given his ancestors charge of the coast and of the distribution of the salt, the Audiencia of Guatemala ordered those who should go to his territory to collect it at the present time to give him the same.''

In any case the Province of Chakan was so close to Mayapan that one can hardly imagine a powerful confederacy there which did not control Chakan. In connection with Chakan, there is a circumstance showing that we must not always attach too much importance to the name of the local ruler, although it is often of the greatest historical significance. Tecoh was an important Chakan town; its cacique in 1557 was Juan Cocom, the same as the Juan Cocom (Nachi Cocom) ruler of Sotuta; but I doubt that Chakan and Sotuta were even allies, though they may have been.

We have some similar evidence for the Province of Cehpech.

RY, 1:77-78: ''At the end of many years [after Motul, capital of Cehpech, was destroyed by the Itza captain Kak-u-pacal], another lord and captain named Nohcabal Pech, a very close relative of the great lord of Mayapan, again populated the said town of Motul with people whom he brought with him; and since then this Nohcabal Pech and his descendants have held the lordship.'' This was not a case of an outsider seizing the area in the confusion following the fall of Mayapan, for members of the Pech lineage, both commoners and upper class, are so numerous in Cehpech as to indicate that they had been there a very long time. There are many of the Pech name all over Yucatan, but in Cehpech they are especially numerous.

We know but little of the history of the Province of Hocaba in pre-Spanish times, and no account of its relations with Mayapan has come down to us. Since the southwest corner of the Province lay only about 8 km from the site of Mayapan, and since Cehpech, to the north of Hocaba, can be associated with that capital, there would seem to be little doubt that the area of Hocaba was subject to the Mayapan confederacy.

We have no direct evidence in regard to the Province of Ah Kin Ch'el, but this region was probably subject to the league of Mayapan, since it was conquered by the Itza captain, Kak-u-pacal, when the Itza came north from Chakanputun (Champoton), as we shall see farther on. Izamal had been the local capital of this area, but the town seems to have been of little importance between the fall of Mayapan and the Spanish Conquest. As we shall see in the historical narratives of Mayapan in Landa and the Relaciones de Yucatán (RY), when Mayapan fell, a young priest of Mayapan, named Mo Ch'el (Namo Ch'el) and also Ah Kin Ch'el, led a group of followers to the region of Tecoh not far east of Izamal. This site is not to be confused with the town of Tecoh in Chakan. Having made his peace with the Cupul Province, he established himself at Tecoh, and we find his descendants with others of the Ch'el lineage ruling all over Ah Kin Ch'el Province in the early sixteenth century. The Ch'el name is not frequent here, and it is very rare elsewhere in Yucatan; his making peace with the Cupul and getting their permission to settle in the neighboring area suggest that he was an outsider and adventurer, but it is very hard to be certain. Ch'el is not one of the older historic names at Izamal, several of which are cited in the accounts of the town that have come down to us.

The history of the Province of Ah Canul is not unlike that of Ah Kin Ch'el. The Ah Canul allies of the Cocom at Mayapan went there after the fall of the city. No account goes farther back than that. At the time of the Spanish Conquest the province extended along the west coast from the Hampolol River, just north of Campeche, to the north coast at Punta Tikopte due north of Hunucma; but beyond describing the borders of the Province of Ah Canul, the Crónica de Calkini relates the entrance of the Ah Canul only into the country south of Maxcanu.

Crónica de Calkini, pp. 13-14 (tentative translation): "Thus also one division, or chapter, [of] what they did, my lineage from which I come. They were not greedy for chieftainship, nor were they provokers of discord, scoffers or bearers of insults. There was my great-grandfather [noh sucun, Vienna dictionary], Namay Canche, when they departed, there from within the town [ich cah] of Mayapan with their batabs: Ah Dzun Canul; this was the lineage which came from Ah Itzam Kauat Ah Canul . . . when they departed from Mayapan with Ah Tzab Canul, and Ah Kin Canul also, and Ah Paal Canul also and Ah Sulim Canul, and Ah Chacah Canul, and Ix Copocab Canul, and Nabich Canul. These are the batabs I have set down in order, nine of them, whom my great-grandfather Namay Canche also reported. They began to love the towns and their batabs; they were also loved by the towns, there where [or, then when] my great-grandfather governed men."

Crónica de Calkini, pp. 35-36: "Shown plainly were their lands and their forests, when the town of Mayapan was destroyed. We recall, we of their lineage, in case it is not known whence we come. This was the beginning [or cause?] of our seeking our land, our forests, we the descendants of the Ah Canul. We know how it was that we came from the east, we, Ah Maya men, when they came, Ah Chikin Suyuaob [the west Suyua people] . . . [a confused statement mentioning somebody from Peten Itza, 'when the Ah Canul arrived']." West Suyua also appears elsewhere as an earlier home of the Tutul Xiu (p. 73 infra; cf. Brinton, 1882, p. 110).

Crónica de Calkini, p. 37 (tentative): "These roads were shown to us by our batabs, Ah Pa Canul, Ah Dzun Canul, of the lineage of Ah Itzam Canul, Ah Chuen Kauil. It was they who settled [where] the Itza are [were?]."

To me this implies that they considered their Cocom associates at Mayapan to be Itza, although they called themselves Maya. The account of the Cocom dynasty in the Valladolid lawsuit would seem to indicate that such was the case (p. 66 infra).

The Calkini chronicle calls the inhabitants of the northern part of the Province Ah Xamancab ("the northland people"). Here were such large towns as Hunucma, Kinchil, Tetis, and Samahil, some of which are, unlike the southern Ah Canul towns, mentioned in the Itza migration narrative in the Chumayel (Roys, 1933, pp. 70-73). In this area the Canul lineage was also politically important, and today it contains more people named Canul than farther south; but we are not told when the Canul settled there.

The Cocom dynasty of Mayapan had brought in two groups of Mexican allies from Tabasco, one apparently in the last part of the fourteenth century, and the other not long before the fall of the capital. The later comers, we know, were called Ah Canul (literally "guardians"), and the earlier appear to have been the Canul who are cited as an affliction to the Maya in the Katun 1 Ahau which fell in 1382-1401 (see pp. 46 and 59-60 infra). This first group of Mexican allies may have been given the rule over the northern part of what later became the Province of Ah Canul quite some time before Mayapan fell.

In the Crónica de Calkini the references to the Itza are obscure; but they do not seem to be hostile, as in the Xiu sources. Friendly references to the Itza also occur in the part of Landa's narrative that he seems to have gotten from Nachi Cocom.

The Crónica de Calkini suggests that, apparently, from Maxcanu south, this was new country to the Ah Canul group, which they occupied without resistance from the local inhabitants, though they may have had some trouble with the Chakan and Mani people, probably over their new boundaries. For the north, including the fairly important towns of Hunucma, Tetis, Kinchil, and Samahil, we know only that they were in the Province of Ah Canul. This is from the Calkini document, and is very positive. As we have noted, it seems possible that the Ah Canul group ruled these northern towns during the hegemony of Mayapan. There was much commerce from Tabasco up the west coast of Yucatan. The question is complicated by the fact that we find a large number of people named Canul in other parts of northern Yucatan (Roys, 1957, passim).

Even in the southern part of the Province of Ah Canul, where the Canul seem to have been newcomers, their chronicle does not mention any trouble with Campeche. Indeed, the Campeche ruler at the time of the Spanish Conquest was named Nadzacab Canul.

It seems evident that the area, which became the Province of Sotuta, was subject to the Mayapan joint government. None of its towns, however, can be identified as those listed in the Itza migration legend.

Landa (1941, p. 39) tells us that after the fall of Mayapan: "And they built in those wooded places many more towns. From these Cocoms proceeded numerous families, and the province where this lord reigns is called Sotuta."

Herrera (Tozzer, 1941, p. 215) states that after Kukulcan founded Mayapan, established a government, and departed, "the lords of Yucatan ... determined to give the ruling power to the Cocom family, who were so rich that they possessed 22 good pueblos." We are not told where they were, however.

Some doubt has been expressed (p. 33 supra) as to whether Campeche, or Canpech, was subject to Mayapan. If it was, it would seem altogether likely that the same was also true of Chanputun, which lay beyond Campeche to the south. Chanputun was the last area to the southwest in which Yucatecan Maya was spoken. Beyond it, Maya-Chontal prevailed; though it resembles Yucatecan Maya, it is definitely a different language. (For a facsimile reproduction of an early seventeenth-century Chontal text, see Scholes and Roys, 1948, insert between pp. 366 and 367.)

IV. HISTORICAL SKETCH OF MAYAPAN

This historical sketch of Mayapan is concerned chiefly with the legendary history of the site and of the antecedents of the Itza, who were the reputed founders of the city. No attempt is made to go back into Classic times, although small amounts of sherds from pre-Classic and Classic Periods have been unearthed. The large number of cenotes at the site, however, would seem to have made it a desirable place to reside from early times. Although no Classic or Maya-Toltec buildings remain standing, many carved stones are found showing evidence of a late Classic architecture, and so there would appear to have been a minor center of local importance in the region during the Late Classic Period (Brainerd, 1942; Andrews, 1942).

Landa (p. 62 infra) tells us that the natives ascribed an age of 500 years to Mayapan when it was destroyed, which would take us back to about A.D. 950. Pollock, in the Introduction (p. 6 supra), notes that Brainerd postulates a virtual abandonment of the site during the Maya-Toltec period. However, he also cites R. E. Smith's more recent ceramic findings as indicating a minor occupation during both Late Classic and Maya-Toltec times.

After the end of the Late Classic Period we find at Chichen Itza evidence of Mexican intruders, who introduced a new culture stemming from the Toltec civilization at Tula, Hidalgo, and whose hegemony lasted a long time. As J. E. S. Thompson noted more than 20 years ago (1937, p. 188): "The erection of dated monuments ceased throughout the central area at 10.3.0.0.0, 1 Ahau. The erection of monuments, according to the new theory of decipherment, ceased at Chichen Itza in the same katun." This would put the end of the purely Maya period at Chichen some time not very long after A.D. 889 along with the end of the Late Classic in the south.

Although the more learned of the sixteenth-century Maya were evidently informed of the length and approximate extent of this Toltec hegemony, the historical traditions furnish us with very few details, except for the events leading to its fall in a Katun 6 Ahau (1204-24).

Dr. Sânchez de Aguilar (p. 29 supra) is a support for modern estimates of the time of the Toltec intrusion. He tells us that the Maya had been subject to the Mexicans 600 years before the arrival of the Spaniards, which would take us back to about 940. He adds (Tozzer, 1957, p. 31): "The only tradition and memory they have of this among them is through the famous, great and magnificent buildings of mortar, rough and dressed masonry and figures and statues of worked stone which they left at Oxumal [Uxmal] and at Chichiniza which one sees today and which can [still] be lived in . . . and on the walls of these the Mexicans left many figures painted in vivid colors which one may see today, of their sacrifices and dances, from which one judges that they are the work of Mexicans and not of the Carthaginians as some of the people thought."

It is of interest, however, to recall that Uxmal is Maya and not Mexican; but, as we shall see, the recently obliterated remains at Merida were also associated with the hegemony of Chichen Itza, although they were of a type usually ascribed to pre-Mexican times.

The period of the Toltec occupation of Chichen Itza is approximately confirmed by Gaspar Antonio Chi in a report of the town of Tekal in 1581 (p. 50 infra). Here we are told that "at one time all this land was under one lord, in the time when the lords of Chichen Itza reigned; and their lordship endured more than 200 years. After much time, the city of Mayapan was settled." Since it is now generally agreed that Chichen ceased to be an urban center shortly before or after

1200, this would give us a date for the coming of the Mexicans not much later than 1004 and very likely somewhat earlier.

This corresponds in a general way to the dates from the Mexican end for the departure of Quetzalcoatl to the south. These are cited by Tozzer (1957, 1:30 and 2:246) as 895, 947, or 999. The Maya name for Quetzalcoatl was Kukulcan, which could also mean "quetzal serpent." Later personages of this name appear at intervals in Maya history down to the time of the fall of Mayapan, but in these sources the only reference to the original deified Quetzalcoatl that I can recognize is in a prophecy for a Katun 4 Ahau that fell in 1224-44 (p. 42 infra). Here we are told of the coming of the Itza and, with them, of the arrival of Kukulcan for the second time. This was the Kukulcan who was a great statesman and of whom Landa has much to tell (pp. 60-61 infra); but the statement in this prophecy that he now came for the second time would seem to indicate plainly that the Maya were well aware of the coming of the first Kukulcan more than 200 years before.

Two other references to the period of the hegemony of Chichen Itza appear in the Relaciones de Yucatán (RY, 1:77, 143). One (p. 51 infra) is the account of "a very ancient lord" named Çacmutul, who came with his followers from the east and founded the town of Motul. He and his descendants ruled the town for 140 years, until it was destroyed by Kak-u-pacal. Since the last was one of the Itza who were expelled from Chakanputun in a Katun 8 Ahau that fell in 1185-1204 (p. 78 infra), these 140 years would take us back to a Katun 9 Ahau which fell in 1047-66, about the middle of the period of the Maya-Toltec hegemony. Çac means "white," and mut is a bird of the Cracidae family. The other reference (Roys, 1952, pp. 141-42) is more vague. We are told that the architectural remains at the site of the Franciscan convent at Merida "were erected [when] the whole land was at peace and the lords of Chichen Itza, an old town which was in this province, governed it."

In the Tizimin, Mani, and 1st Chumayel Chronicles (pp. 71, 73, 75 infra) we read of the discovery of Bacalar, the region of Chetumal Bay, and Chichen Itza, and the settlement of these places by an unnamed group, or perhaps several groups, of people, as well as their subsequent rule at Chichen Itza. These accounts were long considered to constitute a history going back to very remote times. Barrera Vásquez and Morley (1949, pp. 28-30) placed these events as early as the fifth century of our era. Nicholson (1955, pp. 604-05), however, notes that the majority view would now reflect a doubt that Yucatecan Maya history goes back to the Classic Period. Nevertheless, I think that most investigators would at present agree with Tozzer (1959, table 1), who applies these items to the Toltec intrusion into northern Yucatan and places them in the tenth and early eleventh centuries.

Although I would not venture to deny that this opinion might be correct, I am convinced that these items refer to the Itza invasion of northern Yucatan in the late twelfth and early thirteenth centuries.

I believe that the Toltec intrusion did occur in the tenth century, but there is less evidence that it came by way of the east coast. It is true that an expedition sponsored by Carnegie Institution of Washington discovered a chac mool figure at the site of that name near the southern end of Ascension Bay; but, on the other hand, much of the sculpture, architecture, and pottery found on this coast is referable to the culture of Mayapan, which was founded by the Itza (Lothrop, 1924, p. 163, and passim; Tozzer, 1957, pp. 54, 57, 75, and passim).

Landa was informed that the builders of Chichen Itza came from the west, and to me these doubtful items in the Chronicles correspond with the Itza migration narrative in the Chumayel (Roys, 1933, pp. 70-74). By ascribing these items to the later advent of the Itza in northern Yucatan, many of the discrepancies between the various Chronicles tend to disappear. We find fewer Itza migrations from and to Chakanputun, and the career of the Itza in northern

Yucatan is reduced to 13 katuns, as explicitly stated in the 2d Chumayel Chronicle. Moreover, with this chronological interpretation, the Chronicles as a whole correspond more closely with the archaeological evidence as well as with the other historical sources.

One section of each of the first three Chronicles unquestionably reaches back into Maya-Toltec times. This is the part that records the series of katuns from the time of the seizure of Chakanputun by the Itza in a Katun 4 Ahau (968-87) to their expulsion in Katun 8 Ahau (1185-1204). This, however, is Itza, and not Maya-Toltec, history.

The Katun 8 Ahau which fell in 1185-1204 was an eventful period in Maya history. A group of people called the Itza, who had long been living in Champoton, or Chakanputun, was driven out of that city. In one prophecy (Roys, 1954, p. 19) it is stated: "Then are planted their heads in the wall," possibly implying that some of them were killed and their heads set up on a tzompantli, or skull rack. One Chronicle (p. 78 infra), however, states that the city "perished because of Kak-u-pacal and Tec Uilu," who are elsewhere (p. 55 infra) called "valorous captains of the Ah Itza." Barrera Vásquez and Morley (1949, p. 32) place this event in the Katun 8 Ahau which ended in 948; but the association of arrows (halal) with the episode would seem to preclude so early a date (Roys, 1933, p. 160), for this term could not mean a dart.

From Champoton the Itza went into the forest "in their misery" (pp. 71, 74 infra). One Chronicle (p. 78 infra) states that "the remainder of the Itza" went to Tan-xuluc-mul, which has elsewhere been recorded as a site near Lake Peten, from which "they came out and established the land of Saclactun Mayapan," although it appears to have taken several katuns to accomplish this.

On the other hand, we find much evidence that the Itza actually entered northern Yucatan by way of the east coast. The Chumayel contains a long migration narrative (Roys, 1933, pp. 70-73) according to which "they departed [it does not state whence] and arrived at Ppole, where the remainder of the Itza were increased in number; they took the women of Ppole as their mothers." This was the Maya name of the colonial town of Pole, which was long the embarking point for Cozumel Island. We are reminded of the statement (p. 77 infra): "when they descended to become fathers.... The Itza were they then called." Apparently many of them came without wives and intermarried with the local women after their arrival in northern Yucatan.

These statements that the Itza left Chakanputun, or Champoton, went to Tan-xuluc-mul, and came out in the region of what later became the city of Mayapan are not too easy to reconcile with the accounts of an entry by way of the east coast. It was not far, however, from Lake Peten to the head waters of the Belize River, which, in spite of the rapids and falls, as I have suggested elsewhere, could well have been an old trade route from Lake Peten to the Caribbean Sea (Roys, 1957, p. 164 and map 16; González, 1766).

For further evidence of an intrusion by way of the east coast, we have not only entries in the Chronicles (pp. 71, 73 infra) telling of settlements at Bacalar and on Chetumal Bay, as well as the Valladolid lawsuit reports (p. 66 infra) of intruders from Mexico, who "established towns on the coast," but also in the prophecies the Itza are repeatedly called "men of Tantun," and Tantun was either a town in Cozumel or another name for that island (Roys, 1933, pp. 66, 149, 168; 1957, p. 155). It seems also relevant that we find in the Chumayel (Roys, 1933, p. 146) the name Holtun Itza ("port of the Itza") associated with Chactemal (Chetumal) and Tahuaymil, the native province where Bacalar was situated. I should suggest that the name Itza covered several groups of people, some of whom had come from Champoton and some from various other places.

I would not attempt to decide what the Itza were originally. They are sometimes called *u nunil Ah Itza* ("the Itza who speak our language badly"). *Nunil* is obviously derived from the Nahuatl *nontli* ("dumb"), a word which apparently gave rise to Nonohualco ("the foreign land"), but there seems to have been a Nonohual or Nonohualco both in the Mexican highlands and in Tabasco (Tozzer, 1957, pp. 28, 38, 55). The Itza historic-prophetic literature, however, indicates a Maya cultural background, although they were called *dzul* ("foreigners") and some of their deities had Nahuatl names. On the other hand they were repeatedly accused of forms of eroticism that do not seem characteristic of either the Maya or the Nahua. This last suggests an origin on the Gulf coast, but it is evident that they had been influenced by a highland Mexican culture.

The expulsion of the Itza from Chakanputun was soon followed by repercussions in another area, for we find them ravaging towns in northern Yucatan. Motul was attacked by a "lord and captain named Kak-u-pacal ('fiery shield') with men of war. And he killed off and destroyed the town" (p. 51 *infra*). Motul was not resettled until after the fall of Mayapan some 250 years later. We also learn from a report of Izamal that Kak-u-pacal and Uilo (apparently a variant of Tecuilu), "valorous captains of the Ah Itza," conquered the inhabitants of the town. Izamal, however, was resettled in this same Katun 8 Ahau by Kinich Kakmo ("sun-faced fire-macaw"), who was deified, and some associates who later figured as lineage ancestors of important local families (p. 55 *infra*). I cannot find any evidence that these people were considered to be Itza. Izamal was a great center of pilgrimage in Mayapan times.

Although we have no record of an attack on the city which was soon to be named Chichen Itza, centralized government was evidently seriously weakened by the depredations of the Itza invaders, and in the following Katun 6 Ahau (1204-24) we see the end of the Maya-Toltec regime. In a prophecy for this katun (Roys, 1954, pp. 42-43) we read of: "strife or forced collections by demolishing things, by snatching purses, [by] the people of the service of the government of Lord 6 Ahau.... They shall die, those seated on the mat, seated on the throne; severed shall be the necks of the halach uinics of the town. They shall be seated against the wall of the patio by those who do not recognize them, because there is measuring and weighing.... Then they [the people] go out into the land of trees, into the land of rocks. Then three times it shall come to pass, a very serious matter, that the *jícama cimarrona* is their bread, that the breadnut is their bread.... Very evil is the rule of the three occupants of the mat on the dais, of the throne on the dais. It shall be in the fourth tun. They look back to when there was rule, when there was lordship. Afterward, for a short time, the earth shall face upward; then it shall face downward a second time."

I take this figurative language to mean that order was restored and again upset, possibly several times, and the town was finally depopulated. Landa (1941, p. 56 *infra*) tells a very similar story, calling the rulers "three lords who were brothers, who came into that country from the west," and adding that they built very beautiful temples. Herrera y Tordesillas (p. 60 *infra*) repeats this account and adds the detail that after killing the rulers the people "abandoned the place and left the buildings, especially the most honorable, which is ten leagues from the sea." I can find no indication that the Itza, who had made trouble during the previous katun, were directly implicated in the present political upset. In another passage (p. 62 *infra*) Landa briefly recapitulates his story, adding that, "as the old men of the Indians say," these three lords, who came from the west, "brought together in those localities a great population of towns and peoples, whom they governed in great peace and justice for some years." Afterward one of them disappeared, and the other two came to act so badly that the people killed them. In any case, Chichen never again became a city or anything like a city.

In some of the prophecies for the ensuing Katun 4 Ahau (1224-44) the conditions described are what might well be expected after the overthrow of a government that had ruled the country for more than two centuries. Referring to Lord 4 Ahau, the celestial ruler of the period, we read (Roys, 1954, p. 43): 'In his reign they deny obedience to his command.... They do not wish to obey the government of the [local?] rulers of the land, the servitors of the government of Katun 4 Ahau.... They do not make it their duty to obey them. Only by force is there obedience alone. There is no will to obey.... Half of the katun is good; half is not good also. It shall be bad and miserable."

For the good half of this katun we turn to Landa (1941, pp. 56-57), who tells us of the occupation of Chichen Itza by the Itza. They were ruled by a great lord named Kukulcan, who was said to have arrived from the west. He was considered to be a god because of his statesmanship, which was evident from "the order which he imposed on Yucatan after the death of the lords, in order to calm the dissensions which their deaths had caused in the country." It is noteworthy that we find no mention of Kukulcan in the accounts of the flight from Chakanputun and the exploits of Kak-u-pacal and Uilu, two katuns before the Itza occupation of Chichen Itza.

One of the shorter prophecies for Katun 4 Ahau (p. 39 supra) tells of the coming of Kukulcan for the second time, as we have already noted; but we find a fuller account in the Chumayel 2d Chronicle (pp. 76-77 infra). Here we read of the four divisions of the town or nation, whose people came from four places at the four cardinal points. I am unable to identify them, although the one to the west is Holtun Suyua, and holtun can mean, among other things, a seaport (Scholes and Roys, 1948, p. 81). Elsewhere (Roys, 1933, p. 74) we read of "the tribute of Holtun Suyua." Another place, the one to the south, is Can-hek-uitz ("four-peak mountain"), which is said to be in the land of Bolonte-uitz ("nine mountains"). Here we are reminded of an archaeological site named Salinas de los Nueve Cerros, which is near the Río Chixoy in Alta Verapaz, Guatemala.

According to this Chronicle: "It was here that a marvelous thing [mactzil] was achieved for them by their fathers [or lords?]." It is hard to avoid taking this for anything but the appropriation by the Itza of an oracle of the rain gods in the great Sacred Cenote at the site (Mediz Bolio, 1930, p. 91). In any case, from now on the place was named Chichen Itza ("the mouth of the well of the Itza"). It would seem that previously the old city had been called Uucil-abnal, often written Uucyabnal, because it is sometimes found in the prophecy for Katun 4 Ahau instead of Chichen Itza (Roys, 1954, pp. 3, 43). Uucil means "seven," and Abnal is still a familiar Maya family name. In the sixteenth- and seventeenth-century church records and matrículas, Abnal often appears as Haban, which means "bush" or "large herbaceous plant." One is tempted to think that it may have been a significant name among the Maya-Toltec (cf. Roys, 1940, p. 42). One can hardly avoid being reminded of the lush herbaceous growth in the deep depressions in and around the ruins at Chichen Itza, some with a small pool of water at the bottom and some without (Roys, 1939, pl. 12d).

It is also very possible, however, that the name Uucil-abnal ("seven bushy places") may be referable to the Vucub Zivan ("seven ravines") of the Cakchiquel and the Chicomoztoc ("seven caves") of various Nahua nations, which were considered places of origin by these peoples. Recinos and Goetz (1953, pp. 16, 39) identify these last two names with Tula de Hidalgo.

Tozzer (1957, p. 200) expresses the belief that it was the Itza who first discovered the famous oracle in the Sacred Cenote at Chichen Itza. He offers evidence that the earlier types of pottery that have been found in this cenote are utilitarian wares, whereas the sherds of later wares represent a disproportionately large number of ceremonial pieces. He quotes Brainerd as writing: "The conclusion is that the Sacred Cenote was used entirely, or at least mainly, for ceremonial purposes rather than as a miscellaneous dump during Late Mexican times."

Thompson, however, questions so late a date for the first discovery of this oracle. In a recent letter (March 10, 1958) he calls attention to the large amount of jade, including many Classic pieces, recovered from this cenote. To judge by what has been found during years of exhaustive search at Mayapan, he notes, jade was extremely scarce and small during the hegemony of this city. He is unable to believe that these masses of fine jade in the cenote were hoarded until the rise of Mayapan and then thrown into the sacred well, whereas at Mayapan itself there was so little of this precious material. (Cf. Thompson, 1954, pp. 113, 115.)

In any case, as Tozzer comments (1957, p. 200), "There seems little doubt that there were two main purposes of the ancient cenote ritual: the first was intercession for rain, the second was divination of future crops."

Although rain cults of one sort or another had existed in Classic times, it seems hard to tell how early rain ceremonies were associated with cenotes. Evidences of the cenote cult have been found at Mayapan (Smith, 1953, pp. 68-69). It was widespread in the sixteenth century (Scholes and Adams, 1938, passim; Roys, 1957, p. 118); and it is still current in various parts of Yucatan (Redfield and Villa, 1934, pp. 342-43; Shook, 1952, p. 250). For centuries, however, it has ceased to be associated with human sacrifice.

In some of the prophecies for Katun 4 Ahau the language is figurative, and Kukulcan and the Itza are not mentioned by name. The references to the dawn, the awakener or dawn-bringer, and several star names suggest a revival of the Venus cult, which, as we know from the Maya-Toltec monuments, had previously existed at Chichen Itza. A statement that tribute is guarded or hidden at Chichen suggests that the Itza were already exacting tribute in Katun 4 Ahau.

From the native literature we receive the impression that this Itza settlement at Chichen Itza represents a major break with the past and the beginning of a new era. Pollock (pp. 16-17 supra) discusses this problem in some detail. He mentions the disturbed conditions, recorded by Landa and cited in the native historical traditions and prophecies, which seem to refer to the fall of Toltec rule at Chichen Itza and the aftermath of this catastrophe. Pollock notes the decline in pottery technique, art, architecture, and civilization generally, to which the remains at Mayapan bear ample evidence. It would appear that the construction of a great foreign Toltec city at Chichen Itza had affected the Yucatecan Maya much less than did the advent of the Itza, who exercised a strong influence on the life of the people generally. For examples of Yucatecan Maya comments on the period of Itza rule, one needs only to read the Book of Chilam Balam of Chumayel (Roys, 1933, pp. 82-84, 106, 151, 169).

The next important event, as far as we know, was the founding of Mayapan by the Itza. The Chumayel 2d Chronicle (p. 77 infra) tells us that this was in a Katun 13 Ahau, a statement that would seem to be confirmed in the Tizimin and 1st Chumayel Chronicles, where we read that Katun 13 Ahau was when the mats were set in order. The mat was the symbol of chieftainship, and a ruler was frequently called "the occupant of the mat" (cf. Barrera Vásquez and Morley, 1949, p. 31). Landa (1941, p. 57 infra) recounts this event, and, since it follows the settlement of the Itza in northern Yucatan, it could only have been the Katun 13 Ahau that fell in 1263-83. He explains that in an enclosure at Mayapan "they built houses for the lords only, dividing all the land among them, giving towns to each one according to the antiquity of his lineage and his personal value." He tells us that this was the same Kukulcan who ruled with the Itza when they settled in Chichen Itza in the previous Katun 4 Ahau. This, of course, is possible, but more likely he was a successor with the same name or title. This date for the founding of Mayapan conforms with the reports inspired by Gaspar Antonio Chi (p. 50 infra), where we are told of the hegemony of the lords of Chichen Itza and that "after much time" or "with the passing of time" the city of Mayapan was settled. The interval should be between 40 and 60 years.

In the remains at Mayapan we find ample evidence of the changes in Maya culture, which the historical legends and the native literature strongly imply. These the legendary history would seem to ascribe, and for the worse, to the influence of the Itza (cf. Roys, 1933, pp. 83-84). The most conspicuous of these changes are the roughly surfaced walls and vaults, the very rude column drums, and the evidence of an obviously increased proportion of thatched or flat-beamed roofs on public buildings. House plans are plainly very different from those that have been uncovered at Chichen Itza. The pottery is of a different composition from that of Chichen Itza and technically much poorer.

The Toltec period at Chichen Itza has frequently been called the Period of Foreign Domination; and the Mayapan period, that of Maya Resurgence, although it shows many Mexican features. As we have already noted, Pollock confirms the impression we receive from the historical legends and allusions in the katun prophecies.

For a long time after the founding of Mayapan our only possible historical sources appear to be the allusions in the katun prophecies. Those for 11 Ahau are largely concerned with the coming of the Spaniards in a later katun of this name (1539-59). Among them, however, is one that I think refers to the earlier period (1283-1303). Here we read: "Then came many singers, all the singers; the singing boy, the singing old man, the singing old woman, the singing youth, the singing maiden" (Roys, 1954, pp. 11, 37). Surely such singing indicates religious activity, and to me this suggests a revival of the Kukulcan cult by the Itza, for the general conversion to Christianity is usually associated in the prophecies with a Katun 9 Ahau which fell in 1559-79.

For the following katun (1303-23) we are told of a Lord 9 Ahau, whom I would take to be the celestial ruler of the period, if it were not an account of what would seem to be a mundane career: "He shall declare his lordship. Perhaps not merely [or in vain?] did he raise himself to chieftainship, to priesthood, likewise to captaincy, during his reign, on his throne, on his mat. Different is his spirit, when descends the rope to Lord 9 Ahau. Sin is his command, sin is his word, sin is his face, sin is his katun" (Roys, 1954, p. 37). It was a period of terror and war, and there was much "adultery."

Katun 7 Ahau (1323-42) is characterized by the spread of an erotic cult of the nicte, or plumeria flower, which was the symbol of indecency and carnal sin, but also sometimes apparently of lawful procreation. The Itza are, it is intimated, the leaders of this cult, of whom we read (Roys, 1933, p. 151; 1954, p. 13): "They twist their mouths, they wink the eye, they slaver at the mouth, at men, women, batabs, justices, presiding officers, clerks, choirmasters, [everybody, both] great and small.... they have lost all shame."

In the prophecies for Katun 5 Ahau (1342-62; Roys, 1954, p. 39; 1933, pp. 152-53) conditions are described as going from bad to worse. Perversity is now open and shameless. The local chiefs lose their power, and "men and women have few children." The Itza now have complete supremacy, and I take this to be at Mayapan, where, according to Landa (p. 57 infra), the various chiefs of the land were living and where Kukulcan had established something like a joint government. There is some evidence of dissension among them, for we read in the prophecies: "they bite one another, the kokob snakes and the jaguars." "The kinkajou claws the back of the jaguar ...; they are greedy for dominion." These fauna represent military orders like those which the Spaniards found in Mexico (Roys, 1933, p. 197). The sculptures at Chichen Itza show that such organizations had already been prominent among the Maya-Toltec.

The chief complaint in these prophecies, however, is that the rulers and principal men have resorted to sorcery and turn themselves into foxes or lynxes (Maya, ch'amac). "Bent over would be the aspect of the rulers of the land.... Contracted are the bodies and members of the rulers of the land." This has been called nagualism and was widely spread in Mesoamerica (Brinton, 1894, passim). Although I cannot recall any mention of it in the prosecutions for idolatry and sorcery in colonial times, the sixteenth-century Maya were evidently familiar with this, for the

Motul dictionary describes the uaay as a familiar spirit, an animal into which the sorcerer transforms himself. It is not strange that the prophecy states: "No one shall love the rulers of the land, who shall circle about in their walk by themselves." Apparently they stalked the people they did not like, like a beast of prey.

These accounts of the Itza seem to apply to their career in the capital at Mayapan, and here I can see no reference to Chichen Itza. In the tun prophecies ascribed to a Katun 5 Ahau we read of a drought, and the Itza are mentioned. We are told that there is "sound and movement at the wells, at their caves.... At that time they go about at their wells, at the caves.... Then they shall return to their wells, to their caves, to get the stored provision of garden stuff" (Roys, 1949, pp. 166, 169, 172-73). This might be a reference to the cenotes, dry cenotes, and sinks at Mayapan, but I would rather suggest that it refers to those Itza who were living in and around Chichen Itza, near the caves, deep hollows, and cenotes, which are very numerous in the immediate region. We have every reason to believe that the Itza were still controlling the Sacred Cenote with its important oracle, which continued to be a center of pilgrimage. Surely this would have contributed to their prestige.

At some time, probably late, in Katun 3 Ahau (1362-82) the storm broke. Already in the previous 5 Ahau we find the prediction: "He shall bite his master, the tame dog. Not far distant is the day when he shall turn upon him and the sons of those who are insolent to their mothers, insolent to their fathers." This last was a frequent epithet applied to the Itza. In the seventeenth century at Tayasal they were reported to behead the older men at the age of 50, "so that they may not learn to be wizards and kill" (Means, 1917, pp. 131-32). As we shall see, order was not restored until the beginning of the ensuing Katun 1 Ahau.

Apparently this revolt was not against the Itza as a whole; there were also good people who seem to have been considered Itza, although much of our information has come down through their Xiu enemies. Landa (p. 57 infra), perhaps inspired by his informant, Nachi Cocom, gives an improbably cheerful account of this revolution. Confusing the founder of Mayapan with a later personage of the same name or title, he tells us that Kukulcan lived with the lords of this city for some years, left them in great peace and friendship, and returned to Mexico. He stopped on his way at Champoton, where he erected a temple in the sea. The foundations of a building still remain on a reef there, but I know of no Mexican legend of such a return. It is of interest to find Gaspar Antonio Chi (p. 52 infra) glossing over the later destruction much as Landa dealt here with the expulsion to Champoton.

I would equate Landa's story with the items in the Tizimin and Mani Chronicles (pp. 71, 73 infra), where we are told that in a Katun 1 Ahau (1382-1401) Chichen Itza was depopulated and there was an exodus to Champoton (Chakanputun), where were (formerly) the homes of the Itza. I infer, however, that the uprising was largely in the capital at Mayapan, where the Itza were in contact with other elements of the population; and I venture to doubt that all the inhabitants of Chichen Itza and the surrounding region went to Champoton.

This revolution in Katun 3 Ahau and its end at the beginning of 1 Ahau are recounted in considerable detail in various passages in the Chumayel (Roys, 1933, pp. 89, 92, 106), and in some of the katun prophecies (Roys, 1954, pp. 15-16, 39-40). Finally a mighty head-chief comes and propounds a questionnaire. Those chiefs who do not know the correct answers are purged. In one passage they are specifically designated as the Itza, but elsewhere they are called "unrestrained upstarts," "two-day occupants of the mat and throne," and "offspring of the harlot." Their tongues are cut off, their eyes are torn out, and they are trampled and befouled on the ground as they are dragged along. "Then those of the lineage of the noble chiefs shall come into their own, with the other men of discretion and those of the lineage of the chiefs" (Roys, 1933, pp. 88-98, 106).

The house of the first head-chief (yax halach uinic) who propounds the questionnaire is said to be "there at the head of the land"; and in Mayapan times it would seem that this must have been at the capital. Consequently, if we equate these accounts with those of Landa (p. 57 infra) and Herrera y Tordesillas (1941, p. 215), the successor to power at Mayapan could hardly have been other than the head of the Cocom family, "who were so rich that they possessed twenty-two good pueblos." But where were they? Did they possess them now or later on? We do not know.

For the origin of the Cocom family we turn to the Valladolid lawsuit (p. 66 infra). In this sketch I have already correlated the account of a Mexican invasion of the east coast which extended to Chichen Itza with that of the Itza in the late twelfth and early thirteenth centuries. Here we are told that one of the leaders named Sacalpuc "chose a certain Cocom to rule in Chichen Itza, and they all obeyed him as lord, and those of Cozumel were subject to him." Unaccountably the narrative omits any mention of the well known career of the Cocom dynasty at Mayapan and skips to their settlement in Sotuta in the middle of the fifteenth century. One might conjecture that two factions of the Itza were concerned in the revolution and that the one headed by the Cocom took over the leadership at Mayapan.

It is in one of the prophecies for Katun 1 Ahau (Roys, 1933, p. 155) that we first read of the Canul, whom Landa (p. 61 infra) mentions as Mexican allies from Tabasco imported by the Cocom. In this katun they were an affliction to the people for seven years, "the eaters of their food, the destroyers of their crops."

The ensuing Katun 12 Ahau (1401-21) was a happy time. In one prophecy we read (Roys, 1933, p. 158): "There are kind head-chiefs, kind chiefs; kindness and joy is the law of the entire world. Poor men become rich, abundance of bread is the word of the katun. It is a rich year; there is an accumulation of wealth also."

From another prophecy, however, we learn that there are evidently some of the bad Itza left in the country, but: "They shall be overturned, the burrowing opossums. They shall give up their borrowed mats, their borrowed thrones, and they shall go outside into the overgrown fields.... There are no kinkajous; there are no lynxes.... There are no avaricious rulers; there shall be none greedy for rulership" (Roys, 1954, p. 41).

The prophecy also mentions the command of the true ruler, who is to be attested and admired. I suggest that he was a member of the Cocom family, the same or the successor of the "first halach uinic" who propounded the questionnaire in the previous katun. Some versions of this prophecy give the name Saclactun instead of Mayapan; it may well be the old name of the site before Mayapan was founded.

I can find no material in the prophecies for the history of Mayapan in Katun 10 Ahau (1421-41), except that there was a severe famine. From the Tizimin Chronicle (p. 72 infra) we learn that at this time Ah Suytok Tutul Xiu settled at Uxmal; but there is no archaeological evidence of this short occupation. The statement in the Mani Chronicle that this was in the previous Katun 2 Ahau (1244-63) will be discussed elsewhere (p. 74). Landa (pp. 58-59 infra) gives a full account of the arrival of the Xiu from the south, their conciliatory and diplomatic conduct, and their admission into the joint government at Mayapan, where they rapidly achieved a position second only to that of the Cocom (cf. Ciudad Real, 1932, p. 354. The Relaciones de Yucatán also have much to tell us about the Xiu (pp. 50-53 infra), although these accounts exaggerate their power in the Mayapan government. (For a discussion of the late arrival of the Xiu, see Roys, 1954, p. 19; Roys, 1957, pp. 63-65; Xiu family tree.)

The following Katun 8 Ahau (1441-61) was an eventful one. It witnessed the expulsion of another group of the Itza from Chichen Itza and the surrounding towns to Lake Peten in what is now Guatemala, the destruction of Mayapan, and the breaking-up of the joint government into a number of independent states.

Although it has long been agreed that this expulsion of the Itza occurred in a Katun 8 Ahau, many investigators, including the present writer, believed that it occurred in an earlier period of that name, which fell in 1185-1204. In spite of the report to Fuensalida by the Itza on Lake Peten that their flight from Chichen Itza occurred in a Katun 8 Ahau which fell 100 years before the arrival of the Spaniards, there still seemed to be reason for this belief until Brainerd's ceramic investigations (1942) showed that Mayapan, as a post-plumbate city, was later than the Maya-Toltec city at Chichen Itza. Since Mayapan figures prominently in most of the accounts of this expulsion, the event could hardly have occurred before the founding of Mayapan. (Other historical material for the dating of this episode will be cited on pp. 78, 80-81 infra.)

We have five different narratives relating to this episode and more than one version of some of them; the following account is pieced together from eight sources, all but one of which are translated from the Maya (pp. 66-67, 72, 74, 76-78, 80-81 infra).

The trouble is said to have begun when Hunac Ceel, a halach uinic of Mayapan, treacherously concocted a love charm with the plumeria flower, which caused Chac Xib Chac, the ruler of Chichen Itza, to desire the bride of the ruler of Izamal. This magic was still practiced in colonial times (Sânchez de Aguilar, 1937, p. 124). Now Hunac Ceel has been considered to be a name of the current Cocom halach uinic at Mayapan, but one version of the story ascribed the treachery to the Canul ruler (p. 80 infra), who may well have had the title of halach uinic. Chac Xib Chac attended the wedding festivities, was induced to smell the magic flower, and abducted the bride. The Izamal ruler also had a further grievance, for he or his people had been made to give sons in tribute to feed Hapay Can (''sucking snake''), apparently a serpent god at Chichen Itza.

According to the story related by the Peten Itza, their ruler and his followers, fearful of retribution, abandoned Chichen Itza, fled by sea down the east coast, and went inland to Lake Peten.

The traditions of northern Yucatan, however, tell us that Hunac Ceel, with a group of followers bearing Mexican names, attacked Chichen Itza, trampled upon Chac Xib Chac, and depopulated the settlement. One Chronicle (p. 77 infra) adds that the people went into the heart of the forest to Tanxulucmul, which is a known site near Lake Peten.

The traditions also tell us that Izamal and its ruler came to grief because of Hunac Ceel, but I am unable to find how this came about. (For a full account of this episode, see also Tozzer, 1957, 1:47-50.)

Later in this Katun 8 Ahau a revolution occurred, which resulted in the overthrow of the Cocom dynasty, the end of anything even resembling a joint government, and the complete destruction of Mayapan.

Although the Relaciones de Yucatán mention the end of the hegemony of Mayapan, it is chiefly from the Chronicles (pp. 72, 74, 76-78 infra) and Landa (pp. 59-62 infra) that we learn the particulars. The Chronicles state that there was fighting with stones because of the seizing of the wall, the breaking-down of the walled enclosure, and the dissolution of the joint government. Landa explains that the Cocom ruler had brought more Mexicans into the city, played the tyrant, and made slaves of the common people. It is true that in the sixteenth century the Iuit rulers of Hocaba made war on their neighbors principally to capture slaves, which they sold (RY, 1:89). The peoples of what became the Cupul and Cochuah states seem always to have been friendly, but if the city wall was quickly destroyed, they would hardly have been able to bring help in time. The destruction of miles of that massive wall, which is hard to believe unless one has seen it, must have been a terrific task; but once the wall was broken down, there would be little chance of recovery.

In any case, as Landa tells us: "On this account [the Cocom tyranny] the nobles joined the party of the Tutul Xiu and they conspired to put the Cocom to death." The followers of the Cocom and their descendants claimed that they had been unjustly expelled, and it seems possible that the alleged tyranny was only customary procedure in cases of tax delinquency or refusal of military service. Landa's information obviously came from Gaspar Antonio Chi, who was the grandson of a Xiu ruler and, as we shall see, hardly an unbiased informant on matters relating to enmity between the Xiu and the Cocom.

Strangely enough, the Canul allies of the Cocom do not seem to have been greatly hated. They were permitted to retire to a large area in western Yucatan. Here, their own Crónica de Calkini tells us (Roys, 1957, p. 13): "They were not greedy for chieftainship nor provokers of discord." On the contrary, "They began to love the towns and their batabs, and they were loved also by the towns."

The Cocom family, we are told, was all killed off except for one son who was absent in Honduras on a trading expedition. Upon his return he was joined by a large enough body of relatives and followers to found the prosperous and powerful state of Sotuta. It is of interest that, in the 1545 survey of its frontier, Chichen Itza was claimed, apparently with the approval of their Cupul neighbors, as a border site. We know that when the Spaniards arrived the town of Chichen Itza was ruled by Naobon Cupul, but it would appear that the people of Sotuta had what was practically access to the Sacred Cenote, which was still an important center of pilgrimage. Possibly there was some sort of recognition of the former Cocom lordship at the site (Roys, 1939, map p. 9). I surmise that the Cocom, who claimed descent from Quetzalcoatl (Roys, 1933, p. 194), were descended from people who had once called themselves Itza. In the Chumayel we read (Roys, 1933, p. 84): "Furthermore they [the Itza] left their descendants here at Tancah [Mayapan]." Landa (Tozzer, 1941, p. 131) ascribes to the Cocom rulers a burial practice different from that of other nobles.

It is of interest that not only in the historical legends of post-Toltec times, but also in the reports of the Spanish conquerors, Chichen Itza is given an importance out of all proportion to the size of its population as indicated by archaeological evidence (Pollock, 1954, p. 266). Blaz González, who was with Montejo the son during his attempted colonization at the site, states that "this province of Chichen Itza was very thickly populated by the natives." Also: "They had as their lord a cacique called Naobon Cupul, who was lord of all that province, whom all the natives recognized as such, giving him tribute." Here Chichen Itza is not named, but Naobon Cupul, a very unusual name, is mentioned in at least three other early sources as being the chief at Chichen Itza. Juan Darce, in his report of Sodzil near Tizimin, states: "In the time of their paganism before the Spaniards conquered them, they paid tribute to, and obeyed, a lord named Naobon Cupul. The latter resided at Chichen Itza 18 leagues from this province; and he it was whom they knew and recognized as [their] lord. And as tribute they gave him red shell beads and green stones, which the said natives consider to be money; also maize, the hens of the land, and other garden stuff that they gathered" (RY, 2:112, 116, 150). I do not know where, on this great archaeological site, the sixteenth-century town of Chichen was located.

A study of the sixteen new independent states that succeeded the joint government at Mayapan after the destruction of the capital has been made elsewhere (Roys, 1957). From the extent of the Xiu state at the time of the Spanish Conquest, it would appear that they took over a large area that they had not previously possessed. But from whom did they take it? Possibly from the Cocom, but we do not know.

V. THE ACTUAL SOURCE MATERIAL

In the following pages we shall find repeated statements that at one time the Xiu ruled supreme at Mayapan. These assertions come mostly from Gaspar Antonio Chi, who collaborated in making many of the reports in the Relaciones de Yucatán. These are contradicted by Landa, who not only makes the Xiu late-comers at Mayapan but also records that they were leaders of a rebellion or revolution against the Cocom, who seem to have been the heads of a confederacy and apparently came to dominate this joint government. Landa's informants were members of both the Xiu and the Cocom families. Another writer, Ciudad Real, confirms Landa's version.

ANTONIO DE CIUDAD REAL

Ciudad Real (1873, 2:470-71) (in Noyes, 1932, pp. 354-55, translation slightly emended): "In that guardianía [Mani], near a mission-town called Telchac, a very populous city once existed called Mayapan, in which (as if it were a court) all the caciques and lords of the province of Maya resided and there they came with their tribute. Among these were two principal ones, to whom the others acknowledged superiority and vassalage and for whom they had great respect, one was called Cocom and the other Xiu, and the old Indians say that the Xiu, helped by the other chiefs [principales], killed the Cocom, who was a greater lord and more important than he, and to do it he enraged them against him, telling them or making them believe that the Cocom was secretly selling the native Indians to foreign traders. With the death of the Cocom the city of Mayapan was abandoned, the Xiu (as they say) and those of his family and faction [banda] remaining in Mani. The descendants, family, and party of the Cocom went to Zotuta, which is, as has been said before, a secular parish at present; and one was always at war with the other until the coming of the Spaniards. The other caciques did the same and went to their lands, leaving the city of Mayapan deserted. Now on its site are seen many foundations and walls of houses of stone and mortar, many mounds, also temples of the idols, and especially a very tall one, to which one mounts by four stone stairways, with small but very wide steps, placed at the four points of the compass, one at each. On the top of this mound is a house of stone and mortar, vaulted, with certain small rooms, which the priest of the idols, they say, entered to pray. Near the foot of this same mound there is a deep cenote with a very smooth stone on the edge of its mouth, from which (as they say) they used to throw those whom they sacrificed to their gods. It can easily be seen that there was a great population there in times gone by."

Stephens (1843, 1:133) writes of the large principal mound with four wide stairways: "The summit was a plain stone platform, fifteen feet square. It had no structure upon it, nor were there vestiges of any." Shook (1954), who has investigated this pyramid, reports the remains of a superstructure on its summit which much resembled that of the Castillo at Chichen Itza, but, unlike it, had a flat unvaulted roof. Another discrepancy is Ciudad Real's description of the cenote near the principal pyramid. R. E. Smith (1954, pp. 223-25, 230) has explored the cenote, now known as Ch'en Mul, which he describes as "a jug-shaped cenote with low cavelike extensions. . . . A few banana trees grow on the floor in soil washed in through the rather large circular opening. The mouth is near the southern end of the cavern, which is roofed by natural rock." Smith goes on to describe the water holes in the cavern. His plan shows that the floor of the opening is only a little over 4 m below the surface of the surrounding area, so it would seem unlikely that sacrificial victims were thrown in alive.

The place is called Saclactun, or Saclactun Mayapan, by Gaspar Antonio Chi and in various prophecies as well as in the Maya Chronicles. Berendt mentions a hacienda in the district of Izamal named Salactun (Nombres proprios en lengua Maya, MS, f. 73v). Sacal can mean "something white," and actun "cavern." The name might possibly be referable to the cave described by Stephens (1843, 1:135), who states: "We at length came to a body of water, which, on thrusting the hand into it, we found to be incrusted with a thin coat of sulphate of lime, that had formed on the top of the water, but decomposed on being brought into the air."

There may have been more than one Mayapan. The tun prophecies of the Book of Chilam Balam of Mani mention a "Ziyancan Mayalpan." Ziyancan was a name of the Chetumal Bay district, in which a colonial town or village named Mayapan was recorded in 1582 (Scholes et al., 1936-38, 2:63). Its location is not given precisely, but in this same district is the walled site that Gann (1927, p. 22) named Ichpaatun, near which is the ruin of a colonial church. Ichpaatun has been found to be contemporary with the walled cities of Mayapan and Tulum (p. 34 supra; Sanders, 1955, p. 287). I have not yet been able to identify any reference to Tulum in Maya literature. At the time of the Spanish Conquest there was a native village at the site usually called Zama, and a romantic explanation of this name has been given. We have, however, a Maya translation by Gaspar Antonio of a letter to the authorities there (Roys, Scholes, and Adams, 1940, p. 22), in which it is written Tzama. This last is the name of a variety of bean and also a Maya patronymic; it is undoubtedly the correct name of the place.

RELACIONES DE YUCATAN

These reports by various encomenderos of Yucatan were made in the years 1579 and 1581. Many of those in volume 11, which are from western Yucatan, relied for much of their native history and ethnology on Gaspar Antonio Chi, grandson, through his mother, of a former Xiu ruler. Although the information he gave differs materially from Landa and much that is in the Maya Chronicles, it seems very reasonable, except for the exaggerated account of the power of his Xiu ancestors at Mayapan. These exaggerations are largely corrected by Ciudad Real in the passage I have already quoted.

I quote these passages in the order in which they appear in the Relaciones, or Reports, except for the one immediately below, which gives perhaps the best general idea of the historical scheme outlined or implied in the Relaciones de Yucatán.

RY, 1:176-77 (Report of Tekal, north of Izamal): "At one time all this land was under one lord, in the time when the lords of Chichen Itza reigned; and their lordship endured more than 200 years. After much time, the city of Mayapan was settled, where the absolute lord was one whom they called Tutul Xiu, from whom descend the natural lords of the town of Mani of the Royal Crown [i.e., tributary to the King of Spain]. This one took all the land more by strategy than by war; and he gave laws, determined the ceremonies and rites that he had, and he taught letters and ordained his lordships and knighthoods. And the tribute which they gave him was no more than a certain acknowledgment of a [turkey] hen each, and a little maize at the time of harvest. And after his death, and even before it, there were other lords in every province. And they did not take tribute from their vassals more than what the latter wished to give, except that they served them with their persons and arms in war, whenever the occasion offered. And so at the conquest of these provinces [by the Spaniards] there were already many lords and caciques. In every province there were lords, because after the destruction of Mayapan, an ancient city where the Tutul Xiu was lord, there was no enduring peace in these provinces; but each province had its cacique and lord. And so the conquerers found it. [account of idolatry and sacrifices]. . .

"The old men say that those who in ancient times came to populate this land were those who settled at Chichen Itza, a very ancient town, and, according to the account of the Indians, the first after the flood to be settled in these provinces. They were very plain and they did not worship idols nor make any sacrifices until, changing times, necessity, as they say, taught them to worship idols."

The Xiu, as Mexicans and foreigners, no doubt introduced some of their own customs; but as late-comers, I doubt that they taught letters. Perhaps they had some Mexican symbols of their own. In any case, this account states they were not around very long at Mayapan, and the implication is that they were not very long at Uxmal before that. I understand there is not much ceramic evidence of a Mexican occupation of Uxmal.

RY, 1:50 (Relación de la Ciudad de Mérida): "They speak a single language in all these provinces, called Maya and meaning maternal language. It has its origin in an ancient town named Mayapan, which had general dominion over all these provinces, which have 120 leagues of longitude."

RY, 1:77-78 (Report of Motul): "XIII. This town took the name Mutul from a very ancient lord who settled it, whom they called Çacmutul, which means white man. The language which the inhabitants speak is that which the natives of these provinces commonly and generally speak, which they call Maya, which is derived from Mayapan, which was a site where there assisted some lords who in former times held dominion over all this land.

"XIIII. The first lord of this town of Motul ... came with people from toward the east to seek where to settle; and they do not know whence he came, but that he was an Indian. He arrived at the site where this town is and populated it with people; and there he made his home and dwelling. And he and his descendants held the lordship for 140 years. At the end of this time there came against the lord of the said town of Motul at that time another lord and captain named Kak-u-pacal ['fiery shield'], with men of war. And he killed off and destroyed the town. And at the end of many years another lord and captain named Nohcabal Pech, a close relative of the great lord of Mayapan, again settled the said town of Motul with people he brought with him.... And since then this Nohcabal Pech and his descendants have held the lordship."

According to the Chumayel 3d Chronicle (p. 78 infra), Kak-u-pacal was concerned in the destruction of Chakanputun (Champoton) and the expulsion of the Itza from that town. Elsewhere in RY we shall see that he was an Itza captain, who conquered various towns in northern Yucatan, where the Itza came from Chakanputun. This was before the founding of Mayapan. It states, describing an alleged simple worship of one God at some unspecified time in the past:

RY, 1:78: "...and this manner of worship they had until there came from outside this land a great lord with people, called Kukulcan. He and his people practiced idolatry, and from here the people of this land began to worship idols."

Since a personage named Kukulcan figures in the history of both Chichen Itza and Mayapan, I cite this here. My own surmise, however, is that the above passage refers to the Kukulcan who came to Chichen Itza.

RY, 1:118: "All this province has only one language, which all the natives speak. It is called the language of Maya, from a city named Mayapan, which was the last city (poblazon) that the natives had, which, according to their count, would have been depopulated 150 years ago."

This seems to indicate plainly that none of the northern towns at the time of the conquest was the kind of a city that Mayapan had been.

RY, 1:119-20 (in an account of Izamal, following a description of the ruins): "With the passing of time, the inhabitants of the said town [of Izamal] were conquered by Kak-u-pacal and 100 valorous captains prior to the populating of Mayapan [alternative translation, which I do not favor, is 'formerly of the city of Mayapan']. And those who populated this site were named Kinich Kabul, Kinich Kakmo and others, from whom are descended the Xol, Mo, and Coyi, Indians thus named in this province. After many years the Ch'el settled in it, who were lords of the province of Izamal, and to whom the said towns of Tekanto and Tepakam were subject."

These settlers were Kinich Kakmo and Kinich Kabul. A prophecy for Katun 8 Ahau cites Kinich Kakmo (Roys, 1933, p. 160); but we do not know certainly which Katun 8 Ahau it was; apparently it was soon after Kak-u-pacal conquered the city. The latter is also associated with a Katun 8 Ahau (Roys, 1933, p. 141). But ruins at Izamal are very old.

RY, 1:120-21 (cf. ibid., 1:176-77, p. 50 supra): "At one time all this land was under the dominion of one lord, when the ancient city of Chichen Itza was in its prime. To him were tributary all the lords of this province; and even from outside the province, from Mexico, Guatemala, Chiapa ('duapa'), and other provinces they sent him presents in token of peace and friendship. With the passing of time, Mayapan being populated, when Tutul Xiu made himself lord of it, and with the changes of the times, customs were changing, until every province and town came to have their own lords and caciques. And so, when the conquerors came to these provinces, they found many lords and provinces divided.... [an account of tribute, military services, and sacrifices in Conquest times].

"It is said that the first settlers of Chichen Itza were not idolaters, until Kukulcan, a Mexican captain, entered into these parts and taught idolatry, and necessity, as they say, taught them to worship idols."

It is of special interest to note in the preceding historical account, of which Gaspar Antonio Chi was coauthor, that here the violent revolution about 1450, which resulted in the destruction of Mayapan and the dissolution of the joint government into some sixteen independent states, is glossed over in the same way that Landa (p. 57 infra) palliates the earlier political upset of about 1332, when he tells of Kukulcan's departure to Champoton.

RY, 1:147-49 (Relación de Chunhuhub, south of Lago Chichankanab, and Tabi, east of Sotuta): "The natives say that this land was always ruled and governed by the lords which there were in the land; and at one time they were commanded by the lords of Chichen Itza, a most ancient town. And with the changing times they were governed by a Tutul Xiu, from whom descend the lords of Mani, until, with the changes of the times, they came to be divided into the provinces.... [Here, again, Gaspar Antonio Chi suppresses the revolution and the destruction of Mayapan instigated by his Xiu ancestors.] It is not a thousand years that they have worshipped idols, because the lords of Chichen Itza and their vassals, they give to understand, were not idolaters.... These natives did not eat human flesh nor did they know unnatural crime like in other parts of the Indies; and a lord of the Xiu, it is said, in his time had this sin punished by throwing into a burning furnace those whom he found guilty; and today there is seen this furnace in the ancient city of Mayapan, 7 leagues from this city [Merida], where the said Tutul Xiu had his residence and governed the land."

RY, 1:156 (Relación de Dzan, Panabch'en, and Muna in the Xiu Province of Mani): "This province speaks only one language, which they call Maya, derived from the name of Mayapan, a town which was very great in the said province of Mani, which lies 7 leagues southeast of this city [Merida]. And in it appear many houses of stones and an artificial hill that was the temple of Kukulcan, the principal idol, to which they ascended on four sides by very rugged [steep?] steps, more than 100 steps on each side. And on top was a building with four doors which faced the four cardinal points; and the principal door faced the north. With [it are] many other buildings which are around the said hill. In this city (poblazon) the absolute lord was Tutul Xiu, from whom descend the lords of the said Province of Mani.

"XIIII. When we conquerors entered into these provinces we found many lords and caciques, in each province and town its cacique, although the natives say that at one time the said Tutul Xiu governed the whole province, and held all the lords of the land under his dominion, more by strategy than by force of arms. And they say of him that he was very wise, that he taught letters and the count of the months and years to the natives, those which the lords of the said province of Mani used when we conquerors entered the land."

This statement concerning late-comers like the Xiu is of course nonsense. Gaspar Antonio was trying to get a money subsidy about this time, and was exaggerating the importance of his maternal ancestors, the Xiu.

RY, 1:161 (Relación de Mama, in Province of Mani. A more reasonable story, though still strongly pro-Xiu): "They were subject to a lord named Tutul Xiu, a Mexican name. They say he was a foreigner from toward the west; and, having come to this province, the chiefs [principales] of it by common consent raised him to be king, in view of his qualities of valor. And before he came they were subject to the Cocom, who was the natural lord of a large part of these provinces before the Tutul Xiu came."

An account of the former tribute follows: mantas, turkeys, produce, colored stones, some of them of great value "from Mexico and elsewhere beyond the sea."

RY, 1:162 (same report): "After they raised as king the foreigner I mentioned above, the former natural lord, who is the Cocom, began war and the two continued it for many years, during which there were great encounters so that many people were killed on both sides. It lasted until the Spaniards came for the conquest."

RY, 1:192-94 (Relación de Cansahcab, on the railroad between Motul and Temax. Here is an account of Mayapan, most of which is contained, word for word, in the reports on pp. 176-77, 118 (pp. 50-51 supra). It includes, however, the following additional information: "In the time of their heathendom the Indians had a lord who was called Mayapan, I mean the city where they resided. It was settled by a lord who was named Ah Xupan [presumably Ah Xupan Xiu], from whom descend the lords of the Mani of the Royal Crown, who was called Tutul Xiu.

"...after the destruction of Mayapan, an ancient city where the said Ah Xupan was lord, there was no perfect peace. And there he had a servant named Mo Ch'el, and [the latter] so devoted himself to letters that they later gave him the name of Kin Ch'el, which means priest. And so, because they wished to kill him, which he understood through his letters and wisdom, the said Kin Ch'el fled with others and came to the province of Izamal, to a town which is called Tecoh [a little east of Izamal], where he recruited people and went to the Province of the Cupuls, in the territory of the Villa de Valladolid. Here he made friends with them and they raised him as lord and many people came to him. Thence he again returned to his own town of Tecoh, and from there he made war on the Province of Cehpech, until the entry of the Spaniards... and so his descendants trace their origin from the said Mo Ch'el; and they have and at present do govern the said towns of Cansahcab, Dzidzantun, and Yobain; and they [the latter] consider them their natural lords." [He was also lord of the district of Izamal.]

This Tecoh is not to be confused with another site named Tecoh, southwest of Izamal, or with the important town of Tecoh in the Province of Chakan.

RY, 1:196-97 (same Relación): "This land appears to have been well populated, because throughout it there is not a palm of land which has not been cultivated and occupied by large and medium buildings of stone and vaulted houses, very well built. And according to what the Indians say, and as it appeared from their histories, the natives descend from those who made the said edifices. And there is in the land the lineage of them, who descend in direct line from the said ancients. Others say that they [the builders of these structures] were foreigners who settled in it [the land], and that the natives put an end to them and killed them. And both [natives and foreigners] were heathen and were buried under great hills which they made of stone and under pyramids and edifices that they made for them."

I take this to mean that some of the buildings went back to ancestors of the Indians found by the Spaniards. Others were believed to have been built by Itza, who were considered foreigners in spite of the long time they had been in northern Yucatan. Of the Itza, some had been killed; some had been expelled; a so-called remnant of them may have still been living in the north, according to the tun prophecies, though it is doubtful that they still called themselves Itza at the time of the Spanish Conquest.

The above statement implying that all, or most, of the foreigners in northern Yucatan were killed or driven out before the Spanish Conquest cannot be reconciled with conditions found by the Spaniards. There were still in the country ruling families of foreign origin, such as the Ah Canul, Cocom, Xiu, Iuit, Cupul, and I suspect the same was true of others (cf. Roys, 1933, App. E). Besides these there are quite a number of Nahuatl lineage names. I have traced some of them (1940, p. 36) and have detected several others since. Other names, besides patronymics, of Mexican origin are also prominent.

RY, 1:200-201 (Relación de Dzidzantun, Province of Ah Kin Ch'el near the coast). This is a repetition of pp. 176-77 (pp. 50-51 supra).

RY, 1:213 (Relación de "Quizil" [Cizil] and Sitilpech near Izamal). Repetition of pp. 119-20 (p. 52 supra), except that the phrase "Kak-u-pacal and 100 valorous captains" is changed to "Kak-u-pacal and Bilu, valorous captains," which I am sure is the correct version. Bilu (more often written Uilu) and Kak-u-pacal both appear in the Chumayel 3d Chronicle (Roys, 1933, p. 141), in connection with Chakanputun. Martínez Hernández prefers the form Bilu, which could mean "crestless iguana."

RY, 1:224-25 (Relación de Citilcum and Cauich). Repetition of pp. 119-20. Also repeats reference to Mayapan on p. 118 (p. 51 supra). Ibid., pp. 216, 227: repeats account of punishment, at Mayapan, of unnatural crime by burning, as on 1:149 (p. 52 supra).

RY, 1:242-43 (Relación de Sudzal and Chalante, south of Izamal). Repeats pp. 176-77. Pp. 246-47: repeats the account of buildings on pp. 196-97.

Among all these accounts of the Tutul Xiu who first established himself and achieved power, I am especially impressed by the statement on pp. 176-77 (p. 50 supra) that the country broke up into small cacicazgos (i.e., when Mayapan fell) "after his death, and even before it." This comes from Xiu sources, and implies that the Xiu arrived in northern Yucatan, established themselves in the "joint government" (mul tepal) at Mayapan, and overthrew the city within, or almost within, the reign of a single ruler. Consequently, when we read in the Tizimin Chronicle that in Katun 10 Ahau "Ah Zuitok Tutul Xiu founded Uxmal," there seems ground for believing that this was the Katun 10 Ahau immediately preceding the 8 Ahau when Mayapan was destroyed in the fifteenth century. Such an interpretation would make it possible that the unspecified Tutul Xiu who first gained power, Ah Xupan Tutul Xiu of whom the same is said, Ah Zuitok Tutul Xiu, and

Hun Uitzil Chac Tutul Xiu, whom we shall encounter on p. 56 *infra*, were all different names for the same person. More likely, perhaps, it represents two rulers, one who established Uxmal and the other who overthrew Mayapan. All this is very pertinent to the history of Mayapan. At the moment it suggests to me that, about the time the Xiu got into Mayapan, something happened to weaken greatly the power of the Cocom, who had dominated the joint government there; and this enabled the Xiu to conspire and upset the joint government, to the great advantage of the Xiu, who then seized the Province of Mani.

RY, 1:254 (Relación de "Quinacama" [Kinacma] and Muxuppipp, in the Province of Ceh Pech, between Tixkokob and Motul): "The language spoken by the said Indians of my encomienda and spoken generally in all these provinces is all the same; and it is called mayatan [*Maya than*]. It was so named for an ancient city which was depopulated and was called Mayapan. This city subjected all these provinces, because it was of lime and stone, enclosed after the manner of our own Spain. And within the walls there were found, by computation, more than 60,000 homes, not including the suburbs outside. And the king who governed them was called, and had the name, Cotecpan, which means in our vernacular 'man above all.' And because at the time when this populous city was destroyed the inhabitants who remained in it settled among those [the others] of these provinces, and since so much time has passed since its destruction, they have corrupted the word in such a manner that from Mayapan, which was the name of the city, they have called their language, *Maya than*. The said city, according to the count of the old men, was destroyed 200 years ago."

Sixty thousand homes ("*sesenta mil humos*") is of course a very gross exaggeration, but we now know that Mayapan was really a large city by aboriginal American standards, and not merely an imposing shrine center.

In the name "Cotecpan," I am unable to translate *co-* but *tecpan* is the Nahuatl word for "government house." It has often been translated "palace."

It is of interest to note that the revolution previous to that which destroyed Mayapan about 1451 occurred about 1382. This would be almost 200 years before the date of this report by the encomendero of Kinacma and Muxuppipp. I would suggest that here the time of the destruction of Mayapan was confused with that of the previous political upset.

RY, 1:255 (same relación) tells of the introduction of idolatry by "Quetzalquat" and the Mexicans about 800 years previously. This would take us back well into pre-Mexican times; but in any case it must refer to Chichen Itza and not to Mayapan.

RY, 1:286 (Relación de Teabo, Tiek, and Tixculum): "This land speaks one language only, which they call Maya, the language which the people spoke who settled Mayapan, a very ancient city, which the natives had populated a long time ago, where the Tutul Xiu were lords. And it was the last town, most notable, that the natives had. And it would be 160 years ago that it was depopulated. In it those, who are held as nobles in the land, have knowledge of [what were formerly] their home sites and lands [there]."

RY, 1:269 (Relación de Izamal and Santa María) describes the principal temple at Izamal and goes on to state: "The inhabitants of the said town were conquered by Kak-u-pacal and Uilo, valorous captains of the Ah Itza, who [the Itza] were those who settled [*poblaron*] Mayapan. The first settlers of it [Izamal] were named Kinich Kabul, Kinich Kakmo, Cit Ah Cutz [father of the Cutz lineage], and Cit Ah Coyi [father of the Coyi lineage], from whom are descended the Xol, Mo, and Coyi, Indians in this province bearing these family and surnames."

This relación goes on to repeat the historical account in RY, 1:120-21 (p. 52 *supra*).

RY, 1:287: "At one time all this land was under the dominion of one lord, and however, with the changes of passing times, which have been many, their last lord was Tutul Xiu, from whom descend the natural lords of the said town of Mani of the Royal Crown. This last [este] subjected all the lords of the land, more by strategy than by war. They say that the first of these was named Hun-uitzil-chac ['hunuikilchic' but corrected from the Tizimin and the Xiu family tree], lord of Uxmal, a most ancient city and very noted among the native buildings of Mexico. From there he made entry into all the other provinces; and for greatness and special qualities, they say of him that he was very wise in matters of nature. And in his time he taught cultivation of the land, divided the months of the year, taught the letters which they used in this province of Mani, when the conquerors entered the land. And little by little the said Tutul Xius came to govern the land, much to the liking of the natives."

All this is practically the same thing we have already read about Ah Xupan Tutul Xiu, who lived until about the time of the fall of Mayapan. The Xiu family tree (Xiu Chronicle) in the Peabody Museum shows a good picture of this ruler Hun-uitzil-chac and places him in the fifth generation before the Spanish Conquest. It seems to me that this historical material is very difficult, if not impossible, to reconcile with an often-published belief that there was a league of Mayapan, Uxmal, and Chichen Itza in the eleventh and twelfth centuries. I do not doubt that such a league really did exist at a much later time. Also it could have included the three cities in question. But, if so, I should suggest that it consisted of the walled city of Mayapan as the dominant member, along with a small but important and aggressive group of Xiu, camping out among the magnificent ruins of Uxmal, and another warlike aggressive group living near the decaying buildings of Chichen Itza, which continued to be an important center of pilgrimage, in spite of its loss of military supremacy. As I have already noted, a comparatively powerful Cupul group lived there when Montejo arrived, though I think they must have taken possession of this site only after the fall of Mayapan.

I do not offer the above speculations as positive conclusions, but only as an example of the possibilities offered by the historical traditions quoted in these pages.

DIEGO DE LANDA

What is probably the most important account we have of pre-Spanish Maya history is by Landa. In Tozzer's 1941 translation it begins on p. 19 and continues to p. 40, which carries us down to the events immediately following the break-up of Mayapan about the middle of the fifteenth century.

"Chichen Itza is a very fine site, ten leagues from Izamal and eleven from Valladolid. It is said that it was ruled by three lords who were brothers who came into that country from the west, who were very devout and so they built very beautiful temples and their wives lived very chastely, and one of them died or went away, upon which the other two acted unjustly and indecently and for this they were put to death. We will describe later the decoration of the principal building and will tell about the well into which they threw living men in sacrifice, as well as other beautiful things. It is more than seven stadia deep down to the water, and more than one hundred feet broad, marvellously formed by a circular and perpendicular opening in the living rock, and the water appears green, which, they say, is caused by the groves with which it is surrounded.

"It is believed among the Indians that with the Itzas who occupied Chichen Itza, there reigned a great lord, named Kukulcan, and that the principal building, which is called Kukulcan, shows this to be true. They say that he arrived from the west; but they differ among themselves as to whether he arrived before or after the Itzas or with them. They say that he was favorably disposed, and had no wife or children, and that after his return he was regarded in Mexico as one of their gods and called Quetzalcouatl; and they also considered him a god in Yucatan on account of his being a just statesman; and this is seen in the order which he imposed on Yucatan, after the death of the lords, in order to calm the dissensions which their deaths had caused in the country.

''This Kukulcan established another city after arranging with the native lords of the country that he and they should live there and that all their affairs and business should be brought there; and for this purpose they chose a very good situation, eight leagues further in the interior than Merida is now, and fifteen or sixteen leagues from the sea. They surrounded it with a very broad stone wall, laid dry, of about an eighth of a league, leaving in it only two narrow gates. The wall was not very high and in the centre of this enclosure they built their temples, naming the largest, which is like that of Chichen Itza, the name of Kukulcan, and they built another building of a round form, with four doors, entirely different from all the others in that land; as well as a great number of others round about joined together. In this enclosure they built houses for the lords only, dividing all the land among them, giving towns to each one, according to the antiquity of his lineage and his personal value. And Kukulcan gave a name to this city—not his own as the Ah Itzas had done in Chichen Itza, which means the well of the Ah Itzas, but he called it Mayapan, which means 'the standard of the Maya,' because they called the language of the country Maya, and the Indians (say) 'Ichpa,' which means 'within the enclosures.' This Kukulcan lived with the lords in that city for several years; and leaving them in great peace and friendship, he returned by the same way to Mexico, and on the way he stopped at Champoton, and, in memory of him and of his departure, he erected a fine building in the sea like that of Chichen Itza, a long stone's throw from the shore. And thus Kukulcan left a perpetual remembrance in Yucatan.

''After the departure of Kukulcan, the nobles agreed, in order that the government should endure, that the house of the Cocoms should have the chief power; because it was the most ancient or the richest family, or because at this time he who was at the head of it was a man of the greatest worth. This being done, since within the enclosure there were only temples and houses for the lords and the high priest, they ordered that other houses should be constructed outside, where each one of them could keep some servants, and to which the people from their towns could repair, when they came to the city on business. Each one then established in these houses his mayordomo, who bore for his badge of office a short and thick stick, and they called him caluac. He kept account with the towns and with those who ruled them; and to them was sent notice of what was needed in the house of their lord, such as birds, maize, honey, salt, fish, game, cloth and other things, and the caluac always went to the house of his lord, in order to see what was wanted and provided it immediately, since his house was, as it were, the office of his lord.

''It was the custom to seek in the towns for the maimed and blind, and they supplied their needs.

''The lords appointed the governors, and if they were acceptable confirmed their sons in the offices, and they charged them with the kind treatment of the poor people, the peace of the town and to occupy themselves in their work of supporting themselves and the lords.

''All the lords were careful to respect, visit and to entertain Cocom, accompanying him, making feasts in his honor and repairing to him with important business, and they lived in peace with each other amusing themselves with their accustomed pastimes of dancing, feasts and hunting.

''The natives of Yucatan were as attentive to the matters of religion as to those of government, and they had a high priest whom they called Ah Kin Mai and by another name Ahau Can Mai, which means the Priest Mai, or the High-Priest Mai. He was very much respected by the lords and had no repartimiento of Indians, but besides the offerings, the lords made him presents and all the priests of the towns brought contributions to him, and his sons or his nearest relatives succeeded him in his office. In him was the key of their learning and it was to these matters that they dedicated themselves mostly; and they gave advice to the lords and replies to their questions. He seldom dealt with matters pertaining to the sacrifices except at the time of the principal feasts or in very important matters of business. They provided priests for the towns when they were needed, examining them in the sciences and ceremonies, and committed to them the duties of their office and the good example to people, and provided them with books and sent them forth. And they employed themselves in the duties of the temples and in teaching their sciences as well as in writing books about them.

"They taught the sons of the other priests and the second sons of the lords who brought them for this purpose from their infancy, if they saw that they had an inclination for this profession.

"The sciences which they taught were the computation of the years, months and days, the festivals and ceremonies, the administration of the sacraments, the fateful days and seasons, their methods of divination and their prophecies, events and the cures for diseases, and their antiquities and how to read and write with the letters and characters, with which they wrote, and drawings which illustrate the meaning of the writings.

"Their books were written on a large sheet doubled in folds, which was enclosed entirely between two boards which they decorated, and they wrote on both sides in columns following the order of the folds. And they made this paper of the roots of a tree and gave it a white gloss upon which it was easy to write. And some of the principal lords learned about these sciences from curiosity and were very highly thought of on this account although they never made use of them publicly.

"The Indians say that numerous tribes with their chiefs came to Yucatan from the south, and it appears that they came from Chiapas, although the Indians have no more knowledge about it. But this author conjectures it because many terms and word constructions are identical in Chiapas and in Yucatan, and because there are in Chiapas many remains of places which have been abandoned. And they say that these tribes wandered around in the uninhabited parts of Yucatan for forty years, without there being any water in that time except that which came from the rain, and that at the end of that time they reached the mountains which lie almost opposite the city of Mayapan and ten leagues from it. And there, they began to settle and to construct very good buildings in many places; and the people of Mayapan became very good friends with them and were glad to see that they cultivated the land as the natives do; and in this way those of Tutul Xiu subjected themselves to the laws of Mayapan and thus they intermarried, and as the lord Xiu of the Tutul Xius was such he came to be very much esteemed by everybody.

"These tribes lived so peaceably that they had no quarrels nor did they make use of arms, nor bows even for hunting, although today they are excellent archers, and they only used traps and snares, by means of which they took a great deal of game; and they had a certain method of throwing darts by means of a piece of wood about three fingers thick, pierced to about the third of its length, and six palms long and with this and with cords they threw with force and accuracy.

"They had laws against delinquents which they executed rigorously, as (those) against an adulterer whom they delivered to the injured husband, so that he could kill him by throwing a large stone upon his head from a great height, or could pardon him if he wished. To the guilty women, they gave no other punishment than the disgrace, which with them was a very grave matter. And they stoned to death him who committed rape on a virgin, and they tell of the case of the lord of the Tutul Xius who had a brother who was accused of this crime and he had him stoned to death, and then had his body covered with a great heap of stones. And they say that they had another law, prior to the foundation of this city, by which it was ordered that the entrails of adulterers should be torn out through the navel.

"The Governor Cocom began to covet riches and for this reason he arranged with the troops of the garrison, which the kings of Mexico kept at Tabasco and Xicalango, to hand over the city to them. And thus he brought the Mexican people into Mayapan, and oppressed the poor and made many slaves, and the lords would have put him to death but for the fear which they had of the Mexicans. And the lord of the Tutul Xius never consented to this. And the Yucatecans, finding themselves in this situation, learned from the Mexicans the use of arms, and they soon became masters of the bow and arrow, the lance and the axe, their shields and jackets made strong with salt and cotton, as well as the other instruments of war, so that finally they neither admired the Mexicans nor feared them; on the contrary they took little account of them; and in this situation they lived several years.

"That Cocom was the first who made slaves, but from this evil sprang the use of arms with which they defended themselves, so that they should not all become slaves.

"Among the successors of the house of Cocom was a very haughty man, an imitator of Cocom, and he made another league with the men of Tabasco, and he introduced more Mexicans into the city, and he began to play the tyrant and to make slaves of the poorer people. On this account the nobles joined with the party of Tutul Xiu, who was a just statesman like his ancestors, and they conspired to put Cocom to death. And this they did, killing at the same time all his sons, except one who was absent. They sacked his house and took away the lands which he had in cacao and in other fruits, saying that they paid themselves for what he had taken from them. The quarrels between the Cocoms, who said that they had been unjustly expelled, and the Xius lasted so long, that after they had lived in that city for more than five hundred years, they abandoned it and left it in solitude, each party returning to his own country.

"According to the computation of the Indians, about one hundred and twenty years have passed since the abandonment of Mayapan. There are in the plaza of that city seven or eight stones, each about ten feet long and rounded on one side, well worked and containing several lines of the characters which they use, and which cannot be read from their having been worn away by water, but it is thought that it is a memorial of the foundation and the destruction of that city, and there are others like them in Dzilan, a town of the coast, although they are taller, and the natives, when asked about this, reply that they were accustomed to erect one of these stones every twenty years, which is the number which they use in counting their cycles; but it appears that this is without any foundation, since, if this were true, there must have been many more, especially as they are not found in any other towns except in Mayapan and Dzilan.

"The most important possession that the nobles who abandoned Mayapan took away to their own country was the books of their sciences; for they were always very submissive to the counsels of their priests, and it is for this reason that there are so many temples in those provinces.

"The son of Cocom who escaped death through absence on account of his trading in the land of Ulua, which is situated beyond the town of Salamanca, when he heard of the death of his father and of the destruction of the city, returned very quickly and joined with his relations and vassals, and settled in a place which he called Tibolon, which means, 'We have been cheated.' And they built in those wooded places many more towns. From these Cocoms proceeded numerous families, and the province where this lord reigns is called Sotuta.

"These lords of Mayapan did not take vengeance on the Mexicans who had lent their aid to Cocom seeing that they had been persuaded by the governor of the country, and that they were foreigners, and they therefore left them in peace allowing them to establish themselves in a town set apart for themselves alone or to depart from the country; not allowing them to marry the natives of the country, but only amongst themselves. And the latter (Mexicans) chose to remain in Yucatan rather than to return to the lagoons and mosquitoes of Tabasco. And they settled in the province of Canul, which was assigned to them, and there they remained up to the time of the second war of the Spaniards.

"They say that among the twelve priests of Mayapan, there was one who was very wise, who had but one daughter, whom he married to a young nobleman named Ah Chel, who had sons who bore the name of their father according to the custom of the country. And it is said that this priest had predicted to his son-in-law the destruction of that city. And the latter knew a great deal of the sciences of his father-in-law who, they say, wrote on the fleshy part of his left arm certain letters which were of great importance and such as to be respected. And having received this favor, he established himself near the shore, until he succeeded in making a settlement at Tecoh, a numerous population following him. And so the town of the Chels was very important, and they settled the most important province of Yucatan, which they called from their name the province of Ah Kin Chel; and the province of Izamal is where these Chels resided, and went on increasing in numbers in Yucatan until the arrival of the Adelantado Montejo.

"Between the three great princely houses, namely the Cocoms, the Xius, and the Chels, there were great strifes and enmities, and they exist even today although they have become Christians. The Cocoms said to the Xius that they were foreigners and traitors who had assassinated their natural lord and stolen his domains. The Xius answered that they were as good as they and of as old a family and as princely; and that they were not traitors but liberators of the country by putting the tyrant to death. The Chel said that he was as good as they in lineage, since he was the grandson of the most esteemed priest of Mayapan; and for himself personally, he was greater than they, since he had been able to make himself as great a lord as they were. On this account they caused each other's food to be insipid; since the Chel, who lived on the coast would not give fish nor salt to the Cocom, making him go a long distance for it; while the Cocom did not permit the Chel to get any game or fruit."

Herrera y Tordesillas gives another version of the same story, often in almost the same words, and includes more details, presumably from Landa's original manuscript but not in the abbreviated copy that has come down to us. Tozzer has also translated this in his 1941 volume. It begins on p. 215, and ends on p. 216.

"Chichen Itza, which has been mentioned before, is a very good site, ten leagues from Izamal, where the ancients say that three lords ruled, brothers, who came there from the direction of the west, and they gathered a great settlement and ruled there for some years in peace and justice. And these people built great and very splendid buildings. They affirm that they lived without women, very chastely. And in time, they say, one of them died and his absence left so great a flaw that the other two began to be dishonest and partial and to such a degree that the people hated them, so they killed them and abandoned the place and left the buildings, especially the most honorable, which is ten leagues from the sea.

"Those who settled Chichen Itza are called the Itzas. Among them there is a belief that a great lord called Cuculcan reigned and all agree that he entered from the direction of the west and the difference of opinion which exists concerning this is only whether he entered before or after the Itzas or with them. Finally, the name of the building of Chichen Itza and the course of events in the land after the death of the lords show that Cuculkan ruled this land together with them. He was a man of good ability; he had no wife nor children; he was very public-spirited and for this reason considered a god; and in order to tranquillize the country he agreed to found another city where all affairs should go. They chose a site for this eight leagues further inland from where the city of Merida now is and fifteen from the sea, and there they made a circle of about an eighth of a league consisting of a wall in stone laid dry, leaving only two doors. They made their temples and called the largest Cuculkan, and they also built the houses of the lords near the enclosure. Cuculkan divided the land among the latter, giving and assigning pueblos to each one. He gave the city the name Mayapan, which means the banner of the Maya, because Maya means the language. By this means the land was quieted and all lived in great peace for some years with Cuculcan who governed them in justice until, having arranged for his departure and charging them with the good government in which he was leaving them, he returned to Mexico by the same road on which he had come. And he stopped a while in Champoton where in memory of his journey he built an edifice within the sea which can be seen today.

"The lords of Yucatan, believing that they could not be preserved unless one man governed, determined to give the ruling power to the Cocom family, who were so rich that they possessed twenty-two good pueblos. And they ordained that the enclosure was to be for the temples only, that the houses should be built outside it, where they should have their mayordomos (each one of whom carried a short thick rod) who received the tributes and gave them to the lords, which consisted of maize, salt, honey, fish and clothing and the other things of the country. And they brought the maimed and the blind from the pueblos and supported them in the house of these mayordomos. And the lords gave governors to the pueblos, to whom they greatly commended peace and good treatment of the common people and keeping them busy in working for their support and that of the lords. For the matters concerning the worship of their gods they had one who was the high priest whose sons succeeded him in the priesthood. In him were the keys of their religion. He counselled the lords, replied to their questions, provided priests for all the pueblos who busied themselves in teaching their sciences and writing books concerning them. While the Cocoms were living in this good order great companies of people entered from the south from the slopes of the sierras of Lacandon, who, they are sure, were from Chiapas; and they wandered forty years through the abandoned places of Yucatan and finally they reached the sierras which lie almost opposite the city of Mayapan, ten leagues from it, where they settled and built very fine edifices. And at the end of some years, those of Mayapan, being pleased with their manner of living, sent to invite them to build dwellings for the lords in the site of the city. The Tutulxius, for thus the foreigners were called, in view of this civility went to the city and built. And the pueblos spread through the country and they lived in such great peace, the Tutulxius submitting to the laws and customs of Mayapan, that they did not have any kind of arms, because they killed game with snares and traps. Nevertheless, they had laws for the delinquents, and it was customary among them for the adulterer to be handed over to the one whom he had offended and the latter killed him, striking him on the head with a stone, and he could also pardon him if he wished. It was considered that the guilty women were sufficiently punished with the disgrace, which they held as a serious matter. He who forced a virgin was stoned to death.

"While this commonwealth was living in such great peace the worm of covetousness entered the governor of this peaceful city and, communicating with the governor whom the kings of Mexico had in Tabasco and Xicalango, he brought warriors into Mayapan by means of which he tyrannized over the commonwealth and started to make slaves. But the lord of the Tutulxius did not allow it among his people by which he won the love of the country. And by the contact with the Mexicans the natives learned the use of arms, which they had not known until then, in such a way that they became very skillful in shooting arrows and using the lance and the hatchet, with shields and strong jackets of salt and cotton. The lords who introduced the above-mentioned tyranny having died, a proud and restless man succeeded who confirmed the above said league with the Mexicans of Tabasco and brought a larger number of them into Mayapan with whose aid he tyrannized over the country and made slaves of the poor people. And the other lords being unable to bear it, they conspired with the lord of the Tutulxius, and going on a day agreed upon to the house of the lord Cocom, they killed him and his sons, except one, who was absent, and they sacked his house and took his cultivated lands. And they abandoned the city, each lord desiring to live in liberty in his pueblos, at the end of five hundred years from the date of its founding during which they had lived in a very civilized fashion. And from the time it was abandoned, according to the account of the Indians, until the Spaniards arrived in Yucatan, about seventy years had elapsed. Each lord tried to take as many of the books of their sciences as he could to his country where they made temples, and this is the principal cause of the great number of buildings there are in Yucatan.

"All his people followed Ah Xiu, lord of the Tutulxius, and he settled in Mani, which means 'now it is over,' as if to say, 'let us make a new book.' And they settled their pueblos in such a way that they made a great province which is called Tutulxiu today. When the Cocom who was absent in Ulua learned of the death of his father and the destruction of the city he made haste and with friends and relatives he brought together and made a good pueblo with temples to their gods and named it Tibolon, which means 'we have been tricked, there is still time to retaliate.' These people increased greatly and many families sprang from them who were called Cocoms, and their province is now called Sotuta. At the time of the destruction of Mayapan the conspirators did not wish to harm the Mexicans but left them free provided that if they desired to remain in the land they were to settle by themselves and not intermarry with the natives. On these conditions they preferred not to return to the lagoons and mosquitoes of Tabasco and settled in the province of Canul and remained there until the Spaniards came. Another son-in-law of a wise and esteemed priest of Mayapan, called Ah Chel, who learned the sciences from his father-in-law, followed by a large number of people on account of his reputation for knowledge, settled in Terroho; and these Chel lords always continued to be very learned in their religion and to maintain the priesthood. And thus they were lords of a great province which was called Aharrinchel, which is that of Izamal."

Landa, 1941, pp. 177-78: "Chichen Itza, then, is a very fine site, ten leagues from Izamal, and eleven from Valladolid, in which, as the old men of the Indians say, three lords who were brothers ruled, who as they remember to have heard from their ancestors came to that country from the west, and brought together in those localities a great population of towns and peoples; whom they governed in great peace and justice for some years. They were devoted worshippers of their god; and so they erected many and magnificent buildings, and especially one, which was the largest, of which I will here give a sketch, as I drew it when I was there, so that it can be better understood. These lords lived, they say, without women and in perfect decorum and for all the time that they lived thus, they were held in great esteem and were obeyed by all. Afterwards, as time went on, one of them disappeared, who must have died although, the Indians say, he left the country in the direction of Bakhalal. His absence, however it may have occurred, was such a loss to those who ruled after him, that they began to be(come) partisan in the government and so dissolute and unbridled in their habits, that the people came to abhor them so greatly that they put them to death. They laid waste and abandoned the land, leaving their buildings, and the site (which is) very beautiful because it is only ten leagues from the sea. It has all around it very fertile lands and provinces."

In many respects Landa seems more reliable than the Relación (RY, 1:176-77), which skips immediately from the hegemony of Chichen Itza to a late period in the history of Mayapan, when the Xiu were in residence there. Landa and Herrera y Tordesillas, between them, tell us most of the little we know about the history of Mayapan; the Gaspar Antonio Chi report gives what sounds like a reliable account of the laws and customs of the rulers there (Tozzer, 1941, pp. 230-32). As we shall see from the Chronicles, confused as they are so far as any chronology is concerned, there is some evidence that the actual city of Mayapan was founded in a Katun 13 Ahau which ended in A.D. 1283, and quite strong indications that it was destroyed in a Katun 8 Ahau which ended in 1461. As an important capital, this would be a life of 178 years.

To return to Landa's account of the coming of Kukulcan, Landa would seem to have believed that this was after the handsome city constructed by the three brothers had been abandoned, and more or less about the time when the Itza occupied the site.

Now there is a reference in one of the prophecies to Kukulcan coming with the Itza in a Katun 4 Ahau, which I think is the episode Landa mentions, but it was his second, and not his first, arrival in northern Yucatan.

See *Chumayel* (Roys, 1933, p. 161): "Katun 4 Ahau is the eleventh katun according to the count. The katun is established at Chichen Itza. The settlement of the Itza shall take place. The quetzal shall come, the green bird shall come. Ah Kantenal shall come. Blood vomit shall come [referring to an epidemic between 1480 and 1500]. Kukulcan shall come with them the second time. The word of God. The Itza shall come."

Landa's report contains an interesting account of the Kukulcan cult at Mani, which had been previously carried on at Mayapan before the destruction of that city.

Landa, 1941, pp. 157-58: "In the tenth chapter has been related the departure of Kukulcan from Yucatan, after which there were among the Indians some who said that he had gone to heaven with the gods, and on this account they regarded him as god, and fixed a time in which they should celebrate a festival to him as such, and this was celebrated throughout all the land until the destruction of Mayapan. After this (city) was destroyed, it was celebrated only in the province of Mani, and the other provinces, in recognition of what they owed to Kukulcan, presented, one one year and another another, to Mani, four and sometimes five magnificent banners of feathers, with which they solemnized the feast in the following manner, and not like the previous ones: On the 16th of (the month) Xul, all the priests and lords assembled in Mani, and with them a large multitude from the towns. . ."

An account of the festival follows in which a temple of Kukulcan is mentioned and also comedians who played an important part. Both in the tun prophecies and in a katun prophecy for 5 Ahau certain "comedian opposums" play a sinister role which is difficult to understand. I am very skeptical of the statement that after the fall of Mayapan the Xiu capital at Mani exercised a monopoly of celebrating the Kukulcan festivals. This may have been true among the provinces in western Yucatan allied to the Xiu; but such a festival would seem to belong more properly to the Cocom of Sotuta, who considered themselves to be descended from Quetzalcoatl-Kukulcan.

Landa, 1941, pp. 123-24; here is another reference to Mayapan: "This people had preserved from Mayapan the custom of punishing adulterers in the following manner: the investigation having been made and some man having been convicted of adultery, the *principales* met in the house of the lord, and the adulterer having been brought they bound him to a post and handed him over to the husband of the woman who was at fault. And if he pardoned him, he was free, but if not, he killed him by throwing a large stone down from a high place upon his head. Her disgrace, which was great, was a sufficient punishment for the woman, and usually they left their wives for this crime."

The fact that the woman was not severely punished is rather remarkable. It may be relevant to the fact that women could leave their husbands when they wished, and that there was a matrilineal, as well as a patrilineal, reckoning of descent. I am reminded of the convincing evidence of matrilocal residence among the neighboring Acalan, and am inclined to suspect that there was some kind of matriarchal organization in Maya society which has never been brought to light in the literature on the subject. It would be of interest to know whether this was an old Maya trait or was introduced by the Mexican intruders. In some parts of Mexico a woman could inherit the chieftainship, in default of a male successor; but this does not appear ever to have happened among the Yucatecan Maya. (Cf. Roys, 1943, pp. 28, 32, 166.)

Another custom, ascribed by Landa to the Cocom, probably goes back to Mayapan.

Landa, 1941, p. 131: "They used to cut off the heads of the old lords of Cocom, when they died, and then sawed off half the crown on the back, leaving the front part with the jaws and teeth. Then they replaced the flesh which was gone from these half-skulls by a kind of bitumen, and gave them a perfect appearance characteristic of those whose skulls they were. They kept these together with the statues with the ashes [of the cremated bodies], all of which they kept in the oratories of their houses with their idols, holding them in very great reverence and respect. And on all the days of their festivals and rejoicings, they made offerings of foods to them, so that food should not fail them in the other life, where they thought that their souls reposed, and where their gifts were of use to them."

In a footnote to the preceding Tozzer reports: "From the Cenote of Sacrifice at Chichen Itza, a skull has been recovered with the crown cut away, eye sockets filled with wooden plugs, and the remains of painted plaster over the face, evidently attempting a lifelike appearance." It would seem uncertain whether this skull was cast into the cenote during the hegemony of Chichen Itza or in Mayapan times.

Writing of Don Juan Cocom (Nachi Cocom), Landa states (1941, pp. 44-46): "He showed him [the author] a book which had belonged to his grandfather [aguelo], a son of the Cocom who had been killed at Mayapan." Abuelo could also mean "ancestor," and I think that in this case it could have been Nachi Cocom's great-grandfather.

Landa, 1941, p. 98: "They are very particular about knowing the origin of their families, especially if they are the descendants of some family of Mayapan, and they find this out from the priests, since it is one of their sciences, and they are very proud of the men who have been distinguished in their families."

GASPAR ANTONIO CHI

Gaspar Antonio Chi, Relación, in Tozzer, 1941, pp. 230-31 (lacunae in parentheses supplied from López de Cogolludo, 1867-68, bk. 4, transl. by Roys): "Report of some of the customs ... (of the people of the) provinces of Yucatan Salac(tun Mayapan) ... the said provinces and referred ...

"This province of Yucatan, which is (called Maya by the natives, was) governed in former times (by one supreme lord, and the) last descendant of these was Tutul Xiu, (who was lord of Mani. His capital was a) very populous city (named Mayapan,) and by wars and (disagreements between him and his vassals [sic! see Ciudad Real and Landa reports] they came to lose) the said custom. (They resolved upon the destruction of Mayapan and razed the) city about the year of the Lord (one thousand four hundred and twenty,) two hundred and sixty years (after its foundation) ... manner in which (the Spaniards found them when they discovered these kingdoms) ... whence it appears that it is.... (In all these provinces there is only one) language, which the natives call Maya-than.

"These lords of Mayapan held in subjection the entire (country and) the natives of it were tributary (to them during the period when they ruled). The tribute (consisted of) small sheets of cotton, native hens, honey, (cacao and) a resin which served as incense in the temples and sacrifices, (and in all) it was very little, in recognition of vassalage.

"All the citizens and inhabitants who lived within (the enclosure of the city of Mayapan) were exempt from tribute, and in it dwelt (all the nobles of the) land, whence at the present day (those who were considered) lords and nobles in the land remember the sites of their former homes.

'It was the rule and custom that the said nobles and descendants (of the) founders of Mayapan and their families served (in the temples of the) idols and (in) the ceremonies and festivals and (in) the wars (and, as assigned by) rule and custom, they spent most of the days and nights serving (and attending at the) temples.

"Those who dwelt outside the enclosure of the city of many [towns?] ... were subject and tributory to these lords of Ma(yapan) ... (but) they were highly favored (by them), because they themselves (served them as) advocates and protectors and with great solicitude assisted them, when they made any call upon them.

"As for these vassals, there were no towns expressly assigned (to them to live in) ... with others, and they were considered to have license ... were free to marry and dwell (wherever they wished. The reason for this was that they might) multiply (saying that if they restrained them) they could not fail (to decrease in number.) ... (vas)sals there were some when ... were the Tutul Xius, Coco(ms) ... there were in the province.

"Besides the vassals there were ... said city of Mayapan ... served personally in the (wars) ... of which there were many.

"The lands were in common and (so between the towns there were no boundaries or landmarks to divide them) except between one province (and another, because of wars,) and in the case of certain hollows and caves, (plantations of fruit trees and) cacao trees, and certain lands (which had been purchased for the purpose of improving them in some respect) ... land, it does not rain generally at the time ... the many famines which have occurred ...

"(Salt beds were also held in common in these) provinces (on the northern seacoast which supplied) all the inhabitants of the land; (and the inhabitants who dwelt nearest) to these were accustomed to pay tribute from them (to the lords of Mayapan)....

"[Recital of customs in Conquest times] He who corrupted any (maiden or violated any woman) received the penalty of death. (It is said that a lord of the city of Mayapan, the capital of the kingdom, had) his brother ignominiously put to death (because he had corrupted a) maiden.

"...In Merida on the twentieth day of the month of March (in the year one thousand) five hundred and eighty-two.

Gaspar Antonio"

It is strange to find this well informed writer placing the fall of Mayapan so early. His 260 years seem to exemplify a Maya tendency to think of each phase of their history in terms of katun rounds. A more reasonable estimate would appear to be the period from the reported foundation of the city in a Katun 13 Ahau (1263-83) to its fall in a Katun 8 Ahau (1441-61), or about 178 years.

In regard to the former homes of the nobles, I would suggest that the various lords from all over the country had each his own columned tecpan at Mayapan, which people were still able to identify a century or so later, in early colonial times.

The religious functions of the "lords" remind us of the definition in the Motul dictionary of halach uinic: "bishop, oidor [member of a judical body], governor, provincial or commissary [of a religious order]. It is a name for these dignities and other similar ones."

It is hard to reconcile the statement that there were no landmarks showing the boundaries between the lands of different towns with the conditions that we find in very early colonial times. We read much about such landmarks in the Mani Land Treaty of 1557, only 15 years after the final conquest of that area (Roys, 1943, pp. 185-94 and fig. 1). This may have been a Spanish innovation, but the Maya text of the treaty gives the impression that the practice was not new to the writer of the document.

The reference to many wars during the hegemony of Mayapan is of special interest. Were these local rebellions, or were they dissensions in the joint government?

THE VALLADOLID LAWSUIT

The Valladolid lawsuit of 1718 (Brinton, 1882, pp. 114-18) is our only source for the origin of the Cocom family, so prominent at Mayapan during the last 70 years before its fall. Here we read: "how the parties above mentioned . . . came from the kingdom of Mexico, and established towns in these provinces, and that they were a warlike and valiant people and lords, and thus some of them established themselves at Chichen Itza, and others went to the south and established towns at Bacalar, and toward the north and established towns on the coast; because they were three or four lords, and one, who was named Tumispolchicbul [Tan-u-pol-ch'icbul], was a kinsman of Montezuma, king of the kingdom of Mexico, and that 'Cuhuikakcamalcacalpuc' [perhaps Suhuykak-Camal and Sacalpuc, two names] was a very near kinsman of the said Don Juan Kahuil on his father's side, and that the said Ix Nahau Cupul, daughter of Kukum Cupul, was wife of the ancestor [or grandfather?] of the said Don Juan Kahuil, all of whom were those who came from Mexico to found towns in these provinces, prominent people and lords; . . . some remained in Chichen Itza, who were those who built the sumptuous edifices which are in the said locality; others went to found towns at Bacalar, and others to found towns on the coast to the north; and he who went to found towns on the coast was named Sacalpuc, . . . and he chose a certain Cocom to rule in Chichen Itza, and they all obeyed him as lord, and those of the island of Cozumel were subject to him; and from there (from Chichen Itza) they passed to the province of Zotuta, where they were when the conquerors came, and they were always regarded, obeyed and respected as lords."

It is hard to understand why this account of the Cocom family does not mention the well known career of their leaders at Mayapan.

The preponderance of evidence would seem to indicate that these intruders on the east coast included the Itza nation, and that they arrived about the end of the Maya-Toltec period at Chichen Itza, although it would appear that some of the colonial Maya came to believe that it was the Itza who built the magnificent structures at the site.

BARTOLOME DE FUENSALIDA

Bartolomé de Fuensalida, who spent some days with the Itza at Tayasal in 1618, wrote a report of his visit, which includes an account of their history and a very brief description of their books of prophecy. This report has been preserved by López de Cogolludo in his Historia de Yucatán, and the portion quoted here appears in book 9, chapter 14. "These Itza Indians are of Yucatecan descent and were originally from this land of Yucatan; and so they speak the same language as these. It is said that they left the territory and jurisdiction of what is today the Villa of Valladolid and the town of Chichen Itza, where today remain some of the great ancient edifices, which are seen in the land and were so greatly admired when these realms were discovered, as has been said elsewhere. And with them departed other people of neighboring towns. Father

Fuensalida states that one hundred years before the Spaniards came to these realms, they fled from Chichen Itza in the age which they call [the] eighth, and in their language Uaxac Ahau; and they occupied those lands where they live today. Their flight to the island and such hidden places was because they knew, through the prophecies that they had, and which are cited in the second book [of this history], that there were to come from the East people of a nation which was to dominate this land.

"Those whom they call priests preserve to this day the prophecies (written in their ancient characters) in a book like a history, which they call analte [Maya, anahte]. In this they preserve the recollection of whatever has befallen them since they occupied those lands.

"He [Fuensalida] also states that they went to them by sea and by that part which projects toward their lake they have on land a hamlet [rancho] which they call Zinibacan. This means the place where they spread the sails, because it was there that they dried them, after they had gotten them wet.

"It is also said that the occasion for their flight was that when a great lord or petty king of that land was about to be married, during the merrymaking and festivities of the nuptials there came another petty king, who was enamoured of the bride. With armed men he fell upon those who were present at the feast and were unsuspecting, did them some harm, and abducted the bride. The latter [the abductor] was less powerful than the former [the bridegroom], and so seeing that the former would make war on him and fearful of the harm which would pursue him, he prepared to flee. And so, taking the bride with him along with many of his own people, he went to those distant and hidden lands." [The paragraphing is that of the translator.]

Apparently they landed on Chetumal Bay. The González map of 1766 suggests a colonial route from the Caribbean, up the Belize and Mopan Rivers to a settlement named Estancia del Río, from which a road extended in a northwesterly direction to Lake Peten. There are falls and rapids on the Río Mopan, which would have involved portages, but it should be remembered that in the seventeenth century the Itza raiders from Tayasal descended the rapids of the Usumacinta River in their canoes and attacked the towns below Tenosique (Roys, 1957, p. 164; Scholes and Roys, 1948, p. 80; Villagutierre Soto-Mayor, 1701, bk. 6, ch. 4).

Zini means "spread," and in colonial times bacam could mean either "sail" or "banner " Villagutierre Soto-Mayor (1701, bk. 13, ch. 11), who could hardly have known Maya, quotes Fuensalida and adds: "They must have been something like mantas; because, until the Spaniards went there neither they nor other Indians had seen either sails or vessels of such form that they could carry them."

ANDRES DE AVENDANO Y LOYOLA

Andrés de Avendaño y Loyola, who visited the Itza at Tayasal in 1696, confirms and supplements Fuensalida's account of the prophetic literature of these people. Although these books were written in Maya glyphs, he makes it plain that their arrangement and content were of a character similar to those of the katun prophecies in the Books of Chilam Balam, which have been found in northern Yucatan. He tells us (Means, 1917, pp. 141-42): "I told them that I wished to speak to them of the old manner of reckoning which they use, both of days, months and years and of the ages, and to find out what age the present one might be (since for them one age consists only of twenty years) and what prophecy there was about the said year and age; for it is all recorded in certain books of a quarter of a yard high and about five fingers broad, made of the bark of trees, folded from one side to the other like screens; each leaf of the thickness of a Mexican Real of eight.

These are painted on both sides with a variety of figures and characters (of the same kind as the Mexican Indians also used in their old times), which show not only the count of the said days, months and years, but also the ages and prophecies which their idols and images announced to them, or, to speak more accurately, the devil by means of the worship which they pay to him in the form of some stones. These ages are thirteen in number; each age has its separate idol and its priest, with a separate prophecy of its events. These thirteen ages are divided into thirteen parts, which divide this kingdom of Yucathan and each age, with its idol, priest and prophecy, rules in one of these thirteen parts of this land, according as they have divided it; I do not give the names of the idols, priests or parts of the land, so as not to cause trouble, although I have made a treatise on these old counts with all their differences and explanations, so that they may be evident to all, and the curious may learn them, for, if we do not understand them, I affirm that the Indians can betray us face to face.''

To appreciate the historical implications of Avendaño's visit to the Itza at Tayasal, we must go back to the account by Fuensalida, who was there in 1618.

As we have seen, Fuensalida was told that the Itza had left Chichen Itza and come there in a Katun 8 Ahau, 100 years before the Spanish Conquest of Yucatan (1441-61). His argument that the time had come for them to change their religion was rejected by the ruler, who replied: ''that the time had not arrived in which their ancient priests had prophecied that they were to forsake the worship of their gods, because the present age was called Ox Ahau (which is to say the third age), and the one that had been appointed for them, had not arrived so soon as the present time'' (Cogolludo, 1867-68, bk. 9, ch. 10). This is of interest, because Fuensalida's arrival must have been shortly after the beginning of Katun 3 Ahau (September 20, 1618). It now seems clear that the Itza did not intend to abandon their faith until a full katun round (ca. 256 years) had passed since their expulsion from Chichen Itza. This would not be until after the beginning of another Katun 8 Ahau, which would be about July 1697 (Thompson, 1954, p. 142).

Avendaño, who visited Tayasal early in 1696, came on the same errand, but he was better informed on Maya prophecy than Fuensalida, although he still seems to have been about a year off in his computations. In a conference with the ruler and the priests, he tells us (Means, 1917, pp. 143-44): ''I carried on the said work, with the greatest pleasure and earnestness, so that we might discuss in the sight of all, how the time had already expired (according to their prophets) in which they should begin to become Christians. I also made a computation of these accounts (the King and some of the priests aiding with their opinion) so that, confessing that they were convinced, we agreed that four months thereafter was the time wanting to fill out the said period when all the older men would receive baptism.''

Whether or not this was correct according to the local Itza records of that time, most scholars would now agree that Katun 8 Ahau did not start until July 1697. A Spanish army, however, anticipated the dictum of the Maya prophets by about four months, and the last stronghold of the Itza was overthrown in March of that year (Thompson, 1954, pp. 141-42).

This would be the end of almost three katun rounds of Itza history, which purported to begin about A.D. 948 and ended in 1697. The first katun round would have been spent at Chakanputun, or Champoton, the second at Chichen Itza and Mayapan in post-Toltec times, and the third at Tayasal.

THE MAYA CHRONICLES

Of the five so-called Maya Chronicles in the Books of Chilam Balam, four unquestionably deserve the name, and a fifth resembles the others enough to be considered the same. The similarity of the phraseology indicates that the Tizimin, Mani, and Chumayel, 1st Chronicle, are derived from a single source. In the Mani are a number of gaps in the katun sequences, suggesting that the compiler drew from one source after another. In the Tizimin such gaps are less frequent; in the Chumayel there is none, except that once the compiler changed from an account of the Xiu to one of the Itza. For this reason many investigators have preferred the last as being the most authoritative. To me this uninterrupted sequence of katun endings suggests editorial work on the part of the Maya scribe.

In any case, as they stand, Brinton (1882, p. 83) carried the first of these entries back to a date 71 katuns, or 1420 years, before the Spanish Conquest. More recently Barrera Vásquez and Morley (1949, p. 28) have placed the discovery of Chichen Itza in A.D. 415-35, and considered the item to be an authentic record. More than 20 years ago, however, there was already some skepticism regarding such early dates for the events recorded in the Chronicles. Thompson (1937, pp. 187-88) summed up the situation excellently: "The chronicles of the various Chilam Balams may be studied from two points of view. They may be taken as true records of Maya history in Yucatan, or they may be considered to be compositions of seventeenth or eighteenth century rewrite men, who knew very little about Maya history. In the latter case it would seem very possible that these later compilers scanned the historical writings or old songs for references to Katuns, and then strung these on a thread of continuous Katun endings in the positions which they considered most logical. It is not impossible that these compilers confused Tun and Katun references.

"If the chronicles were composed in the manner suggested above, it would be quite easy for a reference to an event to be placed in the wrong sequence or in the wrong Katun round."

Soon a number of other investigators came to believe that the historical traditions of the post-Conquest Maya did not go back into the Classic Period, which appears to have ended early in the tenth century (Thompson, 1941, p. 104; Nicholson, 1955, pp. 604-05).

Chumayel 2d Chronicle begins with what seems to be a song or chant about the founding of Chichen Itza by the Itza; and this is followed by a short chronicle of only four items in more prosaic language. Unlike the other Chronicles, here the intervening katuns are not listed by name. This Chronicle makes it plain that the Itza were active only for 13 katuns in northern Yucatan.

The Chumayel 3d Chronicle follows the general plan of the first three Chronicles, but it is evidently drawn from a different source. It is entitled as being "a record of the katuns for the Itza," which appears to be implied in the other Chronicles, but only here is it expressly stated. In this Chronicle Katuns 1 Ahau and 5 Ahau are emphasized, instead of 8 Ahau and 4 Ahau, as in the others.

Our knowledge of Yucatecan Maya history has been greatly helped by the ceramic investigations of G. W. Brainerd (1958). He has shown that Mayapan was essentially a post-plumbate site and could hardly have been a city of power and importance during the period of structural activity at Chichen Itza. That city, as an important urban community, flourished only until about the end of the plumbate period, some time about the first half of the thirteenth century; and the coarse-paste red ware, characteristic of Mayapan, did not appear until some decades later. The intermediate (in time) black-on-cream, with a coarse paste similar to the red ware, is found in early Mayapan deposits.

Not only is this in accordance with Gaspar Antonio Chi's statement (p. 50 supra): "At one time all this land was under one lord, at the time when the lords of Chichen Itza reigned; and their lordship endured more than 200 years. After much time the city of Mayapan was settled''; but it also conforms with Landa's story of the three brothers (p. 56 supra), the katun prophecy which puts it in a Katun 6 Ahau falling in 1204-24 (Roys, 1954, pp. 24-25, 42-43), and the Chumayel 2d Chronicle, which places the founding of Mayapan in a Katun 13 Ahau, now generally agreed to have fallen in 1263-83.

There has long been a widespread difference of opinion as to the time of the Katun 8 Ahau when the Hunac Ceel episode occurred, whether it was the 8 Ahau which fell in 1185-1204, before the founding of Mayapan, or the following period of that name which fell in 1441-61.

Most of the accounts of this episode link it with the city of Mayapan, and, as Brainerd has shown, Mayapan was a post-plumbate site. Hunac Ceel was a halach uinic at Mayapan, and we are even told the names of some of the guards at the gates of that city (p. 79 infra). Other accounts intimate that the time was not far distant when the Maya were to forsake paganism (p. 80 infra). One account of the event mentions a priest named Cabal Xiu, and Landa makes it plain that Mayapan was already an important city when the Xiu arrived in northern Yucatan (Roys, 1933, p. 67). Especially convincing is Fuensalida's statement that the expulsion of the Itza from Chichen Itza occurred in the ''eighth age'' which fell 100 years before the Spanish Conquest. Still further evidence is an association of the period with Montezuma, presumably the elder of that name, who ruled from 1440 to 1469 (pp. 67 supra, 81 infra; Roys, 1954, p. 21; Tozzer, 1957, p. 48). From the Books of Chilam Balam in the north and the account by the Itza at Tayasal in the south we get almost the same story of the love charm. All this would seem to confirm the statement in the Chumayel 2d Chronicle that the Itza occupation of northern Yucatan lasted only for 13 katuns, or 256 years.

The dates here ascribed to the various entries in the Chronicles seem to me to be the only ones that conform with Landa's and Gaspar Antonio's historical accounts and also with the findings of the archaeologists. It must be admitted, however, that they lead to the disappointing conclusion that these Chronicles tell us very little of the history of the Maya-Toltec city of Chichen Itza while it was a powerful urban center of population. It is true that a katun prophecy for 6 Ahau (1204-24) does confirm Landa's and Herrera y Tordesillas' story of the Three Brothers and the end of this phase of the history of the site (Roys, 1954, pp. 24-25; Tozzer, 1957, pp. 31-32).

This does not imply that the sixteenth-century Maya were entirely ignorant of that brilliant period. As we have seen, Gaspar Antonio tells of the hegemony of Chichen Itza, which lasted more than 200 years. Dr. Sánchez de Aguilar (1937, p. 140), an early creole priest, reports that the Yucatecan Maya had been ''vassals'' of the Mexicans 600 years before the arrival of the Spaniards. The Relación of Merida refers definitely to the period of the hegemony of Chichen Itza, and that of Motul tells of the founding of that town 140 years before the time of Kak-u-pacal and the Chakanputun episode (Roys, 1957, pp. 36, 50).

Consequently the Chronicles, down to the destruction of Mayapan, would appear to be primarily a history of the Itza. If, as Thompson has suggested, the Chronicles are based on historical information found in the katun prophecies, this should not be too surprising. Not only is the Chumayel 3d Chronicle entitled ''a record of the katuns for the Itza,'' but the Itza are repeatedly addressed and admonished in a number of katun prophecies (Roys, 1933, pp. 148, 150, 151). The compiler of the Chumayel, writing in 1782, evidently had the Itza of Tayasal partly in mind. Here the pictures of the crowned lords of the katuns are all numbered and mostly dated. Their faces are depicted as eyeless prior to 1700, that is before the Spanish Conquest and conversion of the people of Tayasal in 1697. In the five following pictures covering the years 1700-80 the open eyes are clearly portrayed, indicating that the Itza are now no longer blind heathen. In a prophecy for 13 Ahau, apparently referring to the Last Day, we read: ''At the end of our blindness and shame our sons shall be regenerated from carnal sin'' (Roys, 1933, pp. 148-62).

Tizimin Chronicle

[1185-1263] Katuns 8 Ahau, 6 Ahau, 4 Ahau, 2 Ahau, four score years and one, in the first tun of Lord 13 Ahau, [Katun] 13 Ahau.

> An explanation of these dates will be found in the first entries of the Mani Chronicle. According to this tentative correlation, this would be the Katun 13 Ahau in which Mayapan was founded (Chumayel 2d Chronicle infra).

[1185-1263] [Katuns] 8 Ahau, 6 Ahau, [4 Ahau], 2 Ahau, which was when Mekat Tutul Xiu arrived at Chacnabiton. Five score years lacking one year.

> Seler (1902-23, 2:48) identifies Chacnabiton as Chiconauhtlan, "place of the nine," referring to the nine lords of the night, the west, where the sun sinks into the underworld (cf. Sahagun, 1938, 2:256).

[1185-1204] [Katun] 8 Ahau was when occurred the discovery of Chichen Itza; it was when occurred the discovery of the province of Ziyancan, of Bacalar.

> In the tun prophecies it is called Ziyancan Mayalpan. This was the name of the region of Chetumal Bay. Here is the walled site now named Ichpaatun (Roys, 1949, p. 171).

[1204-63] [Katuns 6 Ahau], 4 Ahau, 2 Ahau.

[1263-83] [Katun] 13 Ahau was when the mats were set in order.

> The mat, like the throne, was a symbol of government, and I believe that this refers to the founding of a capital at Mayapan in Katun 13 Ahau, as stated in Chumayel 2, and to the regulation of the various chiefs of the country in accordance with their respective importance (cf. Barrera Vásquez and Morley, 1949, p. 31. These authors, however, put this event in a Katun 13 Ahau, which fell in A.D. 495-514).

[1283-1382] [Katuns] 11 Ahau, 9 Ahau, 7 Ahau, 5 Ahau, 3 Ahau.

[1382-1401] [Katun] 1 Ahau. Ten score years did they rule at Chichen Itza. Then they were driven out and went to settle at Chakanputun [Champoton], where were [formerly] the homes of the Itza, holy [or twisted?] men.

> I would correlate this expulsion with Landa's statement, evidently from a more friendly source, that at some time subsequent to the founding of Mayapan by Kukulcan: "leaving them [the lords] in great peace and friendship, he [Kukulcan] returned by the same way to Mexico, and on the way he stopped at Champoton." In the Book of Chilam Balam of Chumayel and prophecies for Katun 1 Ahau elsewhere we read that in a certain Katun 1 Ahau a group of wicked temporary rulers were killed or otherwise disposed of. One passage calls them Itza. Only in the Chronicles is any locality specifically named, but a place called "the head of the province" is elsewhere mentioned (Roys, 1933, p. 95; 1954, pp. 15-17, 40).
>
> Here, in explanation of how the Itza had come to have homes in Chakanputun, or Champoton, the text goes back to their original settlement there in very early post-Classic times. I suggest that a zero date of 8 Ahau is implied.

[948-68] [Katun] 6 Ahau was when the land of Chakanputun was seized.

[968-1185] [Katuns] 4 Ahau, 2 Ahau, 13 Ahau, 11 Ahau, 9 Ahau, 7 Ahau, 5 Ahau, 3 Ahau, 1 Ahau, 12 Ahau, 10 Ahau.

[1185-1204] [Katun] 8 Ahau was when Chakanputun was depopulated. For 13 score years Chakanputun was ruled by the Itza men. Then they came to seek their homes again, when they lost the government at Chakanputun. This was the katun when the Itza went under the trees, under the bushes, under the vines, in their misery.

[1204-1244] [Katuns] 6 Ahau, 4 Ahau. Two score years it was, when [or after?] they came to establish their homes again, after they lost the government at Chakanputun.

> In the Chumayel 2d Chronicle and the katun prophecies for 4 Ahau we find indications that the Itza re-established the Kukulcan cult, possibly with a new aspect of the Venus cult, at Chichen Itza at this time. Landa tells us that this was shortly after the previous government, that of the three brothers, had collapsed at Chichen Itza and the population had been dispersed. The katun prophecies bear evidence that the latter event occurred in a Katun 6 Ahau (p. 41 supra; Roys, 1954, pp. 24-27).

[1244-1421] [Katuns] 2 Ahau, 13 Ahau, 11 Ahau, 9 Ahau, 7 Ahau, 5 Ahau, 3 Ahau, 1 Ahau, 12 Ahau.

[1421-41] [Katun] 10 Ahau was when Ah Suytok Tutul Xiu founded Uxmal. Ten score years it was when they settled at Uxmal.

> This would be 10 katuns after the Itza had established their homes at Chichen Itza.
>
> I suggest that this compilation now goes back to a suppressed zero date in Katun 13 Ahau, when Mayapan was founded.

[1283-1441] [Katuns] 11 Ahau, 9 Ahau, 7 Ahau, 5 Ahau, 3 Ahau, 1 Ahau, 12 Ahau, 10 Ahau.

[1441-61] [Katun] 8 Ahau was when the administration of the halach uinic of Chichen Itza was overthrown because of the treachery of Hunac Ceel. Ah Zinteyut Chan, Tzumtecum, Taxcal, Pantemit, Xuchueuet, Itzcoat, Kakalcat: these were the names of the seven men. It was because of the banquet with Ulil, lord of Izamal. Thirteen folds of katuns [had passed] when they were driven out because of Hunac Ceel, on account of the giving of their sentence [by the judge].

> Maya, u dzabal u natob. One of the meanings of nat, or naat, is "arbitrio del juez" (Motul dictionary, Spanish-Maya part). This sentence has long given trouble to translators.

[1461-1500] [Katuns] 6 Ahau, 4 Ahau, two score years after the seizure of the land of Ichpaa Mayapan because of the Itza men and Ulmil Ahau, because of the treachery of Hunac Ceel.

> Maya, "ca kal hab ca chuci u lumil ichpaa mayapan." Ca has a variety of meanings, among which are "when," "and then," and "after." Here Barrera Vásquez and Morley (1949, p. 36) translate it as "when," but on p. 33 they translate it as "after," in the phrase "after they lost Chakanputun."
>
> Here, I suggest, the compilation goes back to a suppressed zero date in the Katun 4 Ahau when the Itza occupied Chichen Itza.

[1244-1441] [Katuns] 2 Ahau, 13 Ahau, 11 Ahau, 9 Ahau, 7 Ahau, 5 Ahau, 3 Ahau, 1 Ahau, 12 Ahau, 10 Ahau.

[1441-61] [Katun] 8 Ahau was when there was fighting with stones in the fortress of Mayapan, because of the seizure of the wall, because of the joint government within the town of Mayapan.

[1461-1500] [Katuns] 6 Ahau, [4 Ahau].

[1500-20] [Katun] 2 Ahau. In Tun 13 the foreigners [first] passed, when they first saw the land of Yucatan, the province. Four score and 13 years [after the fall of Mayapan].

> The Mani version gives this period as three score years, and Chumayel 1st Chronicle in one place puts the first arrival of the Spaniards in 1513 (Roys, 1933, p. 138).

[1441-61] [Katun] 8 Ahau was when the town of Mayapan was depopulated by [Ah] Uitzil Dzul. Ten score and four score years it was.

> From the beginning of the Katun 8 Ahau, when the Itza were expelled from Chakanputun, to the end of the Katun 8 Ahau, when the Itza were driven out of Chichen Itza, would be 14 katuns, or 14 score years.

[1461-1481] [Katun] 6 Ahau.

[1481-1500] [Katun] 4 Ahau was when occurred the pestilence, when the vultures entered the houses within the walled enclosures [or fortress?].

> This suggests that some of the people continued to live at Mayapan for a time after the destruction of its walls and presumably its public buildings.

[1500-1520] [Katun] 2 Ahau when smallpox occurred.

[1520-1539] [Katun] 13 Ahau was when occurred the death of Ah Pul-ha (the rain-bringer). . . .

[1539-1559] [Katun] 11 Ahau was when the foreigners, mighty men, came from the east, when they arrived here in our land.

> For the remainder of this Chronicle, which is irrelevant to the history of Mayapan, see Brinton, 1882, p. 149; Martínez Hernández [1927], pp. 18-19; Barrera Vásquez and Morley, 1949, pp. 40-47.

Mani Chronicle

[1185-1264] This is the series of the katuns, when they departed from the land, from their home in Nonoual. Four katuns the Tutul Xiu were there in West Suyua, the land from which they came, Tulapan, Chiconahthan. For four katuns they travelled, when they arrived here with Holon Chan, the ruler, and his followers, when they came forth from that land: [Katuns] 8 Ahau, 6 Ahau, 4 Ahau, 2 Ahau, four score and one years, for it was Tun 1 of Katun 13 Ahau, when they arrived here in the land. Four score and one years altogether, with their journey, with their departure from their land, when they came here in the land, Chacnouitan (Chiconauhtlan). The years were 81.

[1185-1282] [Katuns] 8 Ahau, 6 Ahau, [4 Ahau], 2 Ahau, when Ah Mekat Tutul Xiu arrived at Chacnouitan. One year less than five score were they in Chacnouitan. The years were 99 años.

[1185-1204] [Katun 8 Ahau]. This, then, was when occurred the discovery of the province of Ziyancaan, Bacalar.

[1204-63] [Katuns 6 Ahau], 4 Ahau, 2 Ahau.

[1263-83] [Katun] 13 Ahau. Three score years they ruled in Ziyancaan, when they descended there. These were the years they ruled at Bacalar, Chulte. This, then, was when Chichen Itza was discovered. 60 años.

> This could imply either that one group of Itza, already at Bacalar, did not come to Chichen Itza until 13 Ahau, or that the foundation of Mayapan in 13 Ahau is here confused with the earlier discovery of Chichen Itza. (Cf. the Valladolid lawsuit, p. 66 *supra*, and Chumayel 2d Chronicle, p. 77 *infra*.)

[1283-1382] [Katuns] 11 Ahau, 9 Ahau, 7 Ahau, 5 Ahau, 3 Ahau.

[1382-1401] [Katun] 1 Ahau. Six score years they ruled at Chichen Itza. Then Chichen Itza was depopulated, and they went to settle at Chanputun, where formerly were the homes of the Itza, holy [or twisted?] men. These were the years, 120 años.

> Here, as in the Tizimin Chronicle, the text goes back to the original settlement of the Itza at Champoton.

[948-68] [Katun] 6 Ahau was when the land of Chanputun was seized.

[968-1185] [Katuns] 4 Ahau, 2 Ahau, 13 Ahau, 11 Ahau, 9 Ahau, 7 Ahau, 5 Ahau, 3 Ahau, 1 Ahau, 12 Ahau, 10 Ahau.

[1185-1204] [Katun] 8 Ahau was when Chanputun was depopulated. For 13 score years was Chanputun ruled by the Itza men. Then they came to seek their homes again. This was the katun when the Itza went under the trees, under the bushes, under the vines in their misery. These were the years that marched, 260 años.

[1204-24] [Katun] 6 Ahau.

[1224-44] [Katun] 4 Ahau, two score years after they came to establish homes again, after they lost Chakanputun. These were the years, 40 años.

[1244-63] This was the katun, 2 Ahau, when Ah Cuytok Tutul Xiu founded a town at Uxmal.

> I consider this a late interpolation. The Tizimin Chronicle and Gaspar Antonio Chi (pp. 72, 56 *supra*) place this event nine katuns later. Moreover, Landa (1941, p. 31) states plainly that the Xiu occupied Uxmal after the founding of Mayapan, which was in 13 Ahau. Landa's account also implies that it was after Kukulcan's departure to Champoton, which was much later.

[1244-1421] [Katuns] 2 Ahau, 13 Ahau, 11 Ahau, 9 Ahau, 7 Ahau, 5 Ahau, 3 Ahau, 1 Ahau, 12 Ahau.

[1421-41] [Katun] 10 Ahau. Ten score years when they [the Tutul Xiu] ruled with the halach uinics of Chichen Itza and Mayapan. These are the years which marched: 200 años.

> Cf. The Tizimin version, p. 72 *supra*. I consider this a faulty rendition of the Tizimin statement that the Tutul Xiu founded Uxmal in Katun 10 Ahau.

> Apparently going back to a zero date of 13 Ahau, when Mayapan was founded, the series is incompletely recorded as follows:

[1283-1441] These are the katuns: 11 Ahau, 9 Ahau, 6 Ahau [meaning 7 Ahau, 5 Ahau, 3 Ahau, 1 Ahau, 12 Ahau, 10 Ahau].

[1441-61] [Katun] 8 Ahau was when the halach uinic of Chichen Itza was overthrown by the treachery of Hunac Ceel, when it occurred to Chac Xib Chac [at] Chichen Itza, because of the treachery of Hunac Ceel, halach uinic of Mayapan Ichpaa. Four score years and ten years [it was], in Tun 10 of Katun 8 Ahau [1451]. This was the year when he was overthrown by Ah Zinteyut Chan, Tzuntecum, Taxcal, Pantemit, Xuchueuet, and Itzcuat and Kakaltecat. These are the names of the men, seven of them, men of Mayapan. 70 [7?].

It was still in Katun 8 Ahau that they went to overthrow Ah Ulmil Ahau because of the banquet with Ulil Ahau of Izamal. It was thirteen folds of katuns, when they were dispersed by Hunac Ceel because of the giving of their sentence [by the judge].

> I take this to mean that the episode occurred thirteen katuns after the Katun 8 Ahau when the Itza were driven out of Champoton and came to northern Yucatan.

[1461-80] It was 6 Ahau, when ended one score and fourteen years. These were the years which marched, 34 años.

> This could imply that the Hunac Ceel episode occurred in 1447.

[1461-1559] [Katuns] 6 Ahau, 4 Ahau, 2 Ahau, 13 Ahau, 11 Ahau.

[1458?-1539] [From the time] when the land of Ichpaa ["within the wall"] Mayapan was taken, because of the seizure of the fortress, because of the joint government within the town of Mayapan, because of the Itza men and Ulumil Ahau, it was four score and three years until the beginning of [Katun] 11 Ahau. [That had been] when Mayapan was depopulated by Ah Uitzil Dzul [at] Tancah Mayapan. 83 años.

> This mention of Ulumil Ahau, surely the same person as Ulmil Ahau, in connection

with the seizure of Mayapan by the joint government is a confirmation that both the Hunac Ceel episode and the destruction of Mayapan occurred in the same Katun 8 Ahau. The latter event is well known to have occurred between 1441 and 1461. I believe Ah Uitzil Dzul ("foreigner from the Uitz country") to have been the same as Hun Uitzil Chac Tutul Xiu. (Cf. pp. 54-56 supra.) The region around Uxmal and Kabah is still known as the Uitz country. Uitz is the name of a detached hill, as contrasted with Puuc, or range of hills; also Hun Uitzil Chac was said to be a foreigner.

[1441-1461] [Katun] 8 Ahau. This was when Mayapan was depopulated. This was its katun.

[1461-1500] [Katuns] 6 Ahau, 4 Ahau.

[1500-1520] [Katun] 2 Ahau. This was the year which marched, when the Spaniards first passed over, first viewed our land, the province of Yucatan. Three score years after Ichpaa (Mayapan) was depopulated. 60 años.

[1520-1559] [Katuns] 13 Ahau, 11 Ahau.

For the remainder of this Chronicle, which is irrelevant to the history of Mayapan, see Brinton, 1882, pp. 98-105; Martínez Hernández [1927], pp. 9-10; Barrera Vásquez and Morley, 1949, pp. 40-44.

Chumayel 1st Chronicle

A record of the count of the katuns since the finding of Chichen Itza occurred. It is written at the town, in order that it may be known by anyone who wishes to be informed of the count of the katuns.

I suggest that a zero date of 8 Ahau is implied here.

[1204-24] [Katun] 6 Ahau was when occurred the finding [after search] of Chichen Itza.

[1224-83] [Katuns] 4 Ahau, 2 Ahau, 13 Ahau was when the mats were set in order.

[1283-1441] [Katuns] 11 Ahau, 9 Ahau, 7 Ahau, 5 Ahau, 3 Ahau, 1 Ahau, 12 Ahau, 10 Ahau.

[1441-61] [Katun] 8 Ahau was when Chichen Itza was depopulated. There had occurred thirteen folds of katuns, and they settled at Chakanputun in their homes.

The Tizimin and Mani Chronicles put this withdrawal to Chakanputun in the previous Katun 1 Ahau (1382-1401). The Chumayel 3d Chronicle also cites a dispersal in 1 Ahau, but it does not mention Chakanputun. I believe that here the Maya writer confused the flight to Lake Peten in 8 Ahau with the withdrawal to Chakanputun in the previous 1 Ahau, just as the author of the Chumayel 3d Chronicle put the destruction of Mayapan in 1 Ahau instead of in 8 Ahau, when it really occurred. In any case, it may be significant that beneath this item a line is drawn across the page of the manuscript, apparently to indicate that it is the end of this particular phase of Maya history.

Again, as in the two previous Chronicles, the Maya writer goes back to the original Itza occupation of Chakanputun.

[948-87] The katun of 6 Ahau. 4 Ahau was when the land was seized by them at Chakanputun.

[987-1185] [Katuns] 2 Ahau, 13 Ahau, 11 Ahau, 9 Ahau, 7 Ahau, 5 Ahau, 3 Ahau, 1 Ahau, 12 Ahau, 10 Ahau.

[1185-1204] [Katun] 8 Ahau was when Chakanputun was depopulated by Itza men. Then they came to seek homes again. Thirteen folds of katuns had they dwelt at Chakanputun in their homes. This was the katun when the Itza went under the trees, under the bushes, under the vines to their misfortune.

[1204-1441] [Katuns] 6 Ahau, 4 Ahau, 2 Ahau, 13 Ahau, 11 Ahau, 9 Ahau, 7 Ahau, 5 Ahau, 3 Ahau, 1 Ahau, 12 Ahau, 10 Ahau.

[1441-61] [Katun] 8 Ahau was when the Itza men were dispersed from their homes again, because of the treachery of Hunac Ceel, because of their banquet with the lord of Izamal. Thirteen folds of katuns had they been settled, when they were dispersed by Hunac Ceel because of the giving of the sentence of the Itza [by the judge].

> This mention of a banquet with the lord of Izamal would seem to be referable to Fuensalida's account of the stolen bride as one of the reasons for the Itza flight from Chichen Itza to Lake Peten in a Katun 8 Ahau, 100 years before the Spanish Conquest (p. 67 supra).

[1461-81] [Katun] 6 Ahau.

[1481-1500?] [Katun] 4 Ahau was when the land of Ichpaa Mayapan was seized by the Itza men, away from their homes because of the people of Izamal, because of the treachery of Hunac Ceel.

> As it stands, this item seems incompatible with the date I have ascribed to it. Nor is it reasonable to put it in the previous Katun 4 Ahau, which fell in 1224-44, before the founding of Mayapan (cf. Tozzer, 1957, p. 230). I suggest that the chronicler omitted four Maya words which we find in the Tizimin version of this item. These are "ca kal haab ca," which would make the passage read: "two score years after the land ... was seized." Ca has the various meanings: "two," "and then," and "after." We have seen the last meaning in the Tizimin and Mani items: "ca tu zatahob chakanputun," which Barrera Vásquez and Morley (1949, p. 33) translate: (they came to establish their homes a second time) "after they lost Chakanputun."

[1244-1441?] [Katuns] 2 Ahau, 13 Ahau, 11 Ahau, 9 Ahau, 7 Ahau, 5 Ahau, 3 Ahau, 1 Ahau, 12 Ahau, 10 Ahau.

[1441-61] [Katun] 8 Ahau was when there occurred fighting with stones at Ichpaa Mayapan because of the seizing of the wall, (because of) the breaking down of the walled enclosure, because of the joint government within the town of Mayapan.

[1461-1500] [Katuns] 6 Ahau, 4 Ahau, when occurred the pestilence, when the vultures entered the houses within walled enclosures [Maya ichpaa, a term usually applied only to Mayapan in the literature].

[1500-20] [Katun] 2 Ahau was when the eruption of great pustules [smallpox] occurred.

> For the remainder of this Chronicle see Brinton, 1882, pp. 161-62; Mediz Bolio, 1930, pp. 90-91; Roys, 1933, p. 138; Barrera Vásquez and Morley, 1949, pp. 40-44.

Chumayel 2d Chronicle

4 Ahau was the name of the katun when occurred the births of the Pauahencuh, their rulers [or the births of the Pauaha, when their rulers descended?]. Thirteen katuns they ruled; thus they were named while they ruled. 4 Ahau was the name of the katun when they descended, the great descent and the little descent, as they were called. Thirteen katuns they reigned; thus they named them. There, during their residence, it was 13 [katuns] that they resided.

[1224-44] 4 Ahau was the katun when they sought and discovered Chichen Itza. It was there that a marvelous thing was achieved for them by their fathers.

> One is tempted to infer that this "marvelous thing" was the establishment of the oracle in the Sacred Cenote, which Tozzer (1957, p. 200) ascribes to the Itza. Thompson (p. 42 supra) finds cogent reasons for believing that this cenote cult at Chichen Itza had begun much earlier. I would be inclined, however, to identify the marvel as the acquisition of this important oracle by the Itza and their subsequent development of its cult. (Cf. Mediz Bolio, 1935, p. 9.)

Four divisions went forth, the four divisions of the town they were called. From the east, Kincolah Peten, went one division. From the north, Nacocob, came forth one division. But one division came forth from Holtun Suyua to the west. One division came from Canhekuitz ["four-peak-mountain"]; Bolonte Uitz ["nine mountains"] was the name of the land. 4 Ahau was when the four divisions were called. The four divisions of the town [or nation] they were called, when they descended to become fathers, when they descended to Chichen Itza. The Itza were they then called.

For a discussion of these places, see Mediz Bolio, 1935, pp. 9-14.

[? - 1461] Thirteen katuns they ruled, when entered the treachery by Hunac Ceel, and their town [or land] was depopulated; and they went into the heart of the forest to Tan-xuluc-mul, as it is called.

Tan-xuluc-mul was the name of a site near Lake Peten (Means, 1917, p. 128).

[1224-44] 4 Ahau was the katun when their souls cried out.

Maya auat, which implies neither sorrow nor jubilation especially (Motul dictionary).

[1185-1204] Thirteen katuns they ruled including [the time of] their misery. 8 Ahau was the katun when occurred the arrival of the remainder of the Itza, as they were called; and they arrived there, after they ruled at Chakanputun.

Caualac (undefined) is translated as though it were caua ("right after"). Ualac, however, can mean "during."

[1263-83] 13 Ahau was the katun when they founded the town of Mayapan. Maya men were they called.

[1441-1539] [Katun] 8 Ahau was when their town [Mayapan] was depopulated, and they were scattered throughout the entire district. Six katuns [later], after they were dispersed, they ceased to be called Maya.

[1539-59] 11 Ahau was the name of the katun when they ceased to be called Maya, Maya men. Christians were they all called, subject to the succession of St. Peter and the ruling King [of Spain].

For an interesting discussion of this last sentence, see Mediz Bolio, 1930, p. 93.

Chumayel 3d Chronicle

A record of the katuns for the Itza, called the Maya katuns. [Katuns] 12 Ahau, 10 Ahau, 8 Ahau.

[1204-24] [Katun] 6 Ahau was when the people of Conil were dispersed.

This may refer to the intrusion of people from Mexico, who came by way of the Caribbean coast, as related in the Valladolid lawsuit of 1618 (p. 66 supra) and the Chumayel migration narrative (p. 79 infra).

[1224-1342] [Katuns] 4 Ahau, 2 Ahau, 13 Ahau, 11 Ahau, 9 Ahau,7 Ahau.

[1342-62] [Katun] 5 Ahau was when the land of the lord of Izamal, Kinich Kakmo and Pop-holchan, was depopulated because of Hunac Ceel.

Elsewhere in the Books of Chilam Balam Hunac Ceel is associated with a Katun 8 Ahau.

[1362-82] [Katun] 3 Ahau.

[1382-1401] [Katun] 1 Ahau was when the remainder of the Itza at Chichen were dispersed. In the 3d tun of 1 Ahau was the mouth of the well [u chi ch'een] depopulated.

[1401-41] [Katuns] 12 Ahau, 10 Ahau.

[1185-1204] [Katun] 8 Ahau was the katun when the remainder of the Itza, from beneath the trees, beneath the bushes at Tan-xuluc-mul, as it was called, established themselves. They came out and established the land of Saclactun Mayapan, as it is called. In the 7th tun of Katun 8 Ahau, this was the katun when Chakanputun perished because of Kak-u-pacal and Tec Uilu.

[1204-1342] [Katuns] 6 Ahau, 4 Ahau, 2 Ahau, 13 Ahau, 11 Ahau, 9 Ahau, 7 Ahau.

[1342-62] [Katun] 5 Ahau was when foreigners arrived to eat men. Foreigners without skirts were they called. The district was not depopulated by them.

> It has long been suggested that this refers to a Carib foray on the east coast. Such raids are known to have occurred in colonial times (Roys, 1933, p. 142). Apparently the literal translation would be "foreign women without skirts," but it seems unlikely that women would have accompanied the invaders. The Maya is: yx ma pic dzul u kaba.

[1362-82] [Katun] 3 Ahau.

[1382-1401] [Katun] 1 Ahau was when the district of Tancah Mayapan, as it is called, was depopulated. The 1st tun in Katun 1 Ahau was when the halach uinic, Tutul [Xiu], departed with the batabs of the town and the four divisions of the town. This was the katun when the men of Tancah [Mayapan] were dispersed and the batabs of the towns were scattered.

> The destruction of Mayapan and its evacuation by the Tutul Xiu have been well established as occurring in a Katun 8 Ahau (ca. 1451). I suspect that this event is here confused with the serious disturbance that occurred in the previous Katun 1 Ahau.
>
> For the remainder of this chronicle, which does not concern the history of Mayapan, see Brinton, 1882, pp. 171-72; Mediz Bolio, 1930, pp. 94-95; Roys, 1933, pp. 142-43; Barrera Vásquez and Morley, 1949, pp. 52-53.

CODEX PEREZ

Codex Pérez, p. 153. "1698 corrección 1398. [The Year] 13 Muluc was when fighting with stones occurred within the fortress or wall [of Mayapan], in the 7th [tun] of [Katun] 8 Ahau." (For a discussion of the context, see Roys, 1949a, p. 103.)

This is of particular interest, since it obviously refers to the revolution at Mayapan. It would appear to be a suspicious circumstance that in the 3d Chumayel Chronicle (vide supra) the expulsion of the Itza from Chakanputun was also placed in the 7th tun of a Katun 8 Ahau. The 7th tun of any katun ends on, and takes its name from, a day Ahau of the same number as the katun itself. Consequently this 7th tun of Katun 8 Ahau also ended on 8 Ahau. It may be that these two important events, the expulsion from Chakanputun and the revolution at Mayapan, were confused by the Maya scribe. Thompson suggests (communication) that there might have been a superstition: that people began an attempt at expulsion in the 7th tun of a Katun 8 Ahau because 8 Ahau was associated with violent change.

NARRATIVES RELATING TO THE HUNAC CEEL EPISODE

Chumayel, Roys, 1933, pp. 66-70 (with slight corrections): "Ah Itzim-thul ['lizard-rabbit'?] was their commander at Ichcanzihoo. Uayom-ch'ich' ['bird-naual'?] was their priest at Ichcanzihoo. Canul [occupied] the mat-on-the-jaguar. His second, Ah Kin Chable, was their ruler. Cabal Xiu was their priest. Uxmal Chac was their commander, formerly he was their priest.

"Then Hapay Can ['sucking snake'] was brought to Chemchan [at Uxmal]. He was pierced by an arrow [or impaled on a tzompantli?], when he arrived at the bloody wall there at Uxmal.

"Then Chac-xib-chac was despoiled of his insignia. Zac-xib-chac and Ek-yuuan-chac were also despoiled of their insignia. Ix Zacbeliz ['she of the white road, or causeway'] was the maternal grandmother of the Chacs. Ek-yuuan-chac was their father. Hun-yuuan-chac was their youngest brother; Uooh-puc was his name. A glyph was painted on the palm of his hand; then it was painted below his throat, also painted on the sole of his foot, also painted on the ball of the thumb of Ah Uooh-puc. The Chacs were not gods. The only true God is our Lord God; they worshipped them [or him?] according to the wisdom of Mayapan.

"Ah Kin Coba was the priest there within the wall [at Mayapan]. Zulim Chan was at the west. Nauat was the guardian of the south gate. Couoh was the guardian of the east gate. Ah Ek was his companion. This was their ruler: Ah Tapay-nok Cauich ['Cauich with the embroidered mantle'] was the name of their halach uinic, Hunac Ceel, the representative [or person offered to?] Ah Mex Cuc. Then he demanded one complete plumeria flower; then he demanded a white mat; then he demanded a mantle faced on two sides. Then he demanded a green turkey; then he demanded a mottled snail; then he demanded homa-gourds." [For homa cf. Roys, 1931, p. 245; 1933, p. 70 note.]

Here follows a migration narrative, purporting to relate to the first settlement of the country but apparently relating to the Itza occupation in the late twelfth century (Roys, 1933, pp. 70-73). Following this is a short passage, which I think might relate to the foundation of Mayapan by the Itza and the subsequent exaction of tribute in Katuns 13 and 11 Ahau (1263-1303).

Roys, 1933, pp. 74-75. "Then began the introduction of tribute to them at Chichen. At Tikuch [a town east by north from Valladolid] arrived the tribute of the four men [perhaps the heads of the traditional four divisions of various nations]. 11 Ahau was the name of the katun when the tribute was handled. There at Cetelac [probably the archaeological site known as Yaxuna, not the town Yaxuna] it was assembled. There it was. Then came the tribute of Holtun Zuiua there at Cetelac, where they agreed in their opinions. 13 Ahau was the katun when the halach uinics received the tribute.

"Then began their reign; then began their rule. Then they began to be served; then those who were to be thrown [into the cenote] arrived; then they began to throw them into the well, that their prophecy might be heard by the rulers. Their prophecy did not come. It was Cauich, Hunac Ceel, Cauich was the name of the man who put out his head at the opening of the well on the south side. Then he went to take it. Then he came forth to declare the prophecy; then began the taking of the prophecy. Then began his prophecy. Then they began to declare him ruler. Then he was set in the place of the rulers by them. Then they began to declare him halach uinic. He was not ruler formerly, only the office of Ah Mex Cuc. Now the representative of Ah Mex Cuc was declared ruler. Surrounded by a wall of dry stone was his house [?] [of dry stone was his house?]. Then, they say, he was sought on his hill. Then they began to take the prophecy of this ruler, after it was declared. Then they began to set aloft the house on high for the ruler. Then began the construction of the stairway. Then he was set in the house on high in 13 Ahau, the sixth reign. Then began the coming to pass of the hearing of the prophecy, the news, the ua [untranslated word] of Ah Mex Cuc, as he was called. Then he carried nearly to Baca the news of Ah Mex Cuc. He was placed there. Then he began to be treated as a ruler [or father?]; then respect to the name of Ah Mex Cuc began. Then he was obeyed, then he was served there at the mouth of the well. Chichen Itza was its name because the Itza went there. Then he removed the precious stones of the land, the precious stones of their necklaces, the property of the Itza, removed and [put] in the water. Then began the introduction of misery there at Chichen Itza. Then he went to the east and [arrived] at the home of Ah Kin Coba. There came 8 Ahau. 8 Ahau was the name of the katun when their rule came to pass. Then came forth the change of the katun, and there came forth the change of rulers." [Torn page.]

To identify Ah Mex Cuc we have only the following passage: Chumayel (Roys, 1933, p. 147):

"These were the four lineages from heaven, the substance of heaven, the moisture of heaven, the halach uinics, the rulers of the land: Zacaal Puc, Holtun Balam, Hoch'tun Poot, Ah Mex Cuc Chan."

Here we find the last associated with Zacal Puc, who was a deified ancestor (Scholes and Adams, 1938, 1:153) and was one of several Mexican leaders who invaded eastern Yucatan and founded towns there (p. 66 supra).

Tizimin, pp. 22-23, slightly emended from Codex Pérez (pp. 120-21): "[Katun] 8 Ahau was the time when Ix Chan Cab swept the market place. Then descended the word of Oxlahun-ti-ku ['13 gods']. 8 Ahau at Chichen; Oxlahun-ti-ku [was] its aspect. Thrice greeted be your seat! This was the rule, when it came at the command of Oxlahun-ti-ku; 8 Ahau was when it occurred at Chichen when the ruler of the people of Uxmal was painted [on the record of the katuns?]. Then occurred the trampling on the back of Chac-xib-chac by Ah Nacxit Kukulcan; then came the general questioning [katlam] of the Ah Itza. Then came purse-snatching strife, overturning-things strife, blowgun strife. Then sin was introduced; it came through Lord 8 Ahau also. Then occurred the ... of the ceiba tree. So it occurred a second time because of Ah Chac-xib-chac at Chichen, whatever thing would be its charge [or destiny] in the future. At one time, one shot [suddenly] it would be. It was Katun 8 Ahau also, when it occurred [to] Ah Ulil Itzmal. This, then, was the time when he [Ah Chac-xib-chac] sniffed [at the plumeria], when he was deceived, because a sin was committed against Ah Ulil Ahau, against the woman, the wife of his fellow ruler. This was the establishing of the katun. It occurred in the 17th [Mani version, 16th] ..., the command [or prophecy] of mighty [or holy] Itzam-caan ['sky-lizard']. There came forth the rattlesnake with Hapai Can. Then Ah Itzmal Ul Ahau was deceived. Then occurred the giving in tribute the son of mighty [or holy] Itzmal in order to feed Hapai Can, during the misery of Ah Itzmal-thul. Then arrived Yax-bolai ['green beast of prey']. Then arrived the buzzard in the heart of the sky with Chac-bolai and Chac-xib-chac. Miserable is his soul, when he undergoes his misery here at Izamal, deceived by the sin of the ruler of the Canul. This was because he gave as tribute his son to Hapai Can. Then when it was learned about by Kukulcan, then he was beheaded and he was killed by Ah Kukil Can. They saw it, they heard it, all the children of Itzmal-thul, who gave in tribute what was swallowed by Hapai Can. These were the subjects who bore the sin of their ruler. Then began the testing of Ah Itzam-caan. Then came the introduction of the sin of the ruler of the Canul. Then came forth the rattlesnake [or chief teacher, a homonym] at the mouths of the wells here at Maxcanu, at Tuchican. When the ruler came forth, 13 was his charge, then he was begotten by his father."

One of the most important implications of this story is that the "sin of the ruler of the Canul" (u keban yahau canul) is practically the same as "the treachery of Hunac Ceel" (u keban than hunac ceel) in the Chronicles. Therefore it is hard to avoid the conclusion that Hunac Ceel was one of the Canul, or Ah Canul, "mercenaries" of the Cocom ruler at Mayapan. I surmise that the Kukulcan mentioned here was the actual Cocom ruler, for the family claimed descent from the god of that name. Hapai Can ("sucking snake") is still the name of an evil spirit among the Lacandon, who draws people to him with his breath and kills them (Roys, 1933, pp. 179, 194). One is tempted to think of a storm or wind god.

Book of Chilam Balam of Mani, in Codex Pérez, pp. 126-27: "Now Katun 11 Ahau, according to its reign, was when the foreigners entered our land here, in order to bring us into Christianity. It then began, as they say, but it was [Katun] 8 Ahau, before the coming of the foreigners. This was when occurred the introduction of treachery to them, the holy men [a term applied to the Itza in the Chronicles].... This was when began the introduction of treachery to them [keban than]. They understood the arrival of the time of the opening of the 13-cluster plumeria flower through the agency of Hunac Ceel, halach uinic of Mayapan within the walls [of Mayapan]. It was he who caused the odor of the plumeria to come forth to his [Chac-xib-chac's] nose, so that he would desire the woman. Now this was because the time drew near, the arrival of the time, the katun, given to them by their great rulers. These were Cetzalcuat [Quetzalcoatl], and Ah Buluc Am ['11 spider'], as he was called by their priests and their wise men. This was Montezuma." [For a slightly different interpretation of this text, see Solís Alcalá, 1949, pp. 249-51.]

The narrative goes on to say that all this was known to the priests: Chilam (Balam), Napuc Tun, Ah Kin Pech, Ah Xupan Nauat, Ah Kin Teppan-ciz ("priest enveloped in a stench"). Also it was understood by the Spanish conqueror, Sr. Don Cosme de Burgos. Unsuccessful attempts have been made for many years to identify Cosme de Burgos. The narrator puts this event in a Katun 8 Ahau, which, he states, began in 1392. This would appear to be about half a century too early.

Sánchez de Aguilar, 1937, p. 124. "In this city of Merida it is well known that there are some Indian sorceresses, who with words open a rose [a term sometimes applied to the plumeria flower] before its time. And they give it to smell or put it under the pillow of the person whom they wish to attract to their unchaste desire. And if the person who gives it smells it, the latter becomes irrational for a long time, calling to the one who was to smell it and for whom the rose was opened."

Tizimin, p. 27. "Katun 8 Ahau was seated, when there occurred the depopulation of Mayapan. It is to the south."

Chumayel, Roys, 1933, p. 132. "The katun was established at Mayapan in [Katun] 7 Ahau." "The katun is established at Zaclactun in [Katun] 12 Ahau." "In [Katun] 2 Ahau at Maya Cuzamil Mayapan." [Items on Chumayel katun wheel.]

Tizimin, Roys, 1949, p. 165. "This would be the time of the taking of the katun [referring to 5 Ahau]. Mayapan was the aspect of the change of the katun, at the time of the descent of the children of the quetzal, the children of the green bird. At that time would be the affliction of women's offspring, the affliction of men's offspring."

In that katun, according to the katun prophecies, the Itza, with their erotic practices, were dominating the other members of the Mayapan confederacy to the great detriment of the population generally.

In conclusion it is noticeable that the earlier Spanish writers emphasize the association of the Cocom with the city of Mayapan, whereas, on the other hand, the native Maya literature does not mention the Cocom in connection with that city. I ascribe this to the fact that our Maya records come mostly from Xiu sources. The Xiu bitterly hated the Cocom, even in colonial times. This native literature, however, frequently mentions the Itza and always in terms of extreme aversion. To me this suggests that the Cocom rulers at Mayapan had considered themselves to be Itza, until the Itza fell into serious disrepute in the revolution which occurred at Mayapan in the late fourteenth century. As we have seen, some of the Itza were killed at this time, and others went to Champoton. About the middle of the fifteenth century the remainder of those who still called themselves Itza, who seem now to have been living around Chichen Itza and in the neighboring towns, were expelled to the region of Lake Peten by warriors from Mayapan.

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Abbreviations in the text are: Chumayel (Book of Chilam Balam of Chumayel); Cogolludo (López de Cogolludo); Mani (Book of Chilam Balam of Mani); RY (Relaciones de Yucatán); Tizimin (Book of Chilam Balam of Tizimin).

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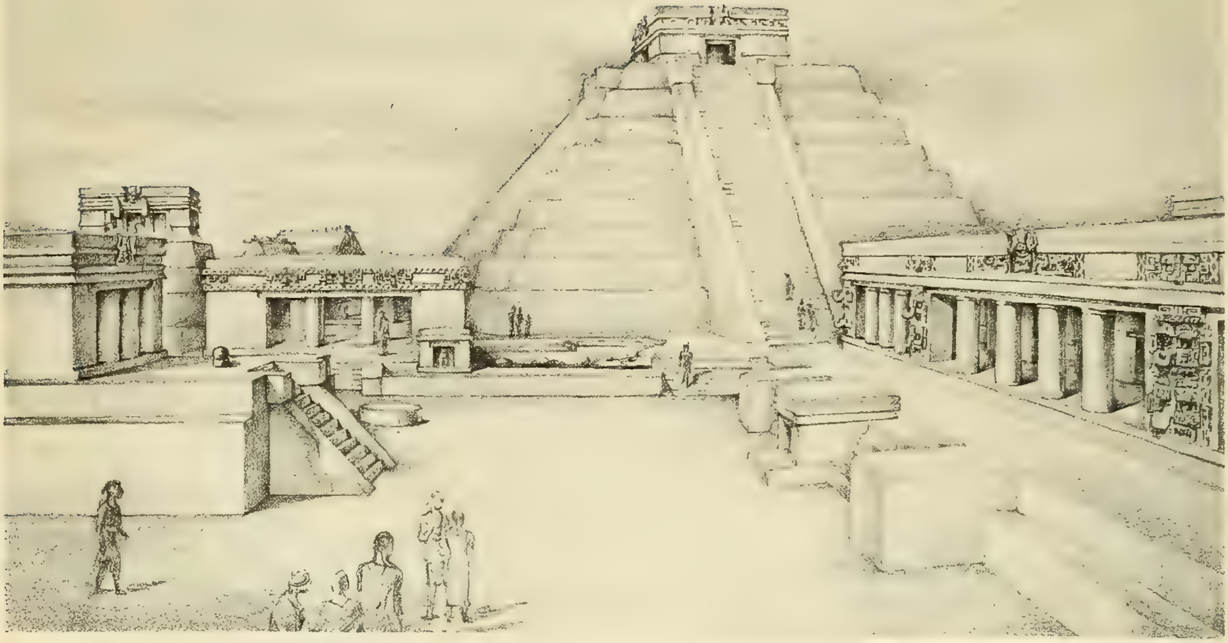

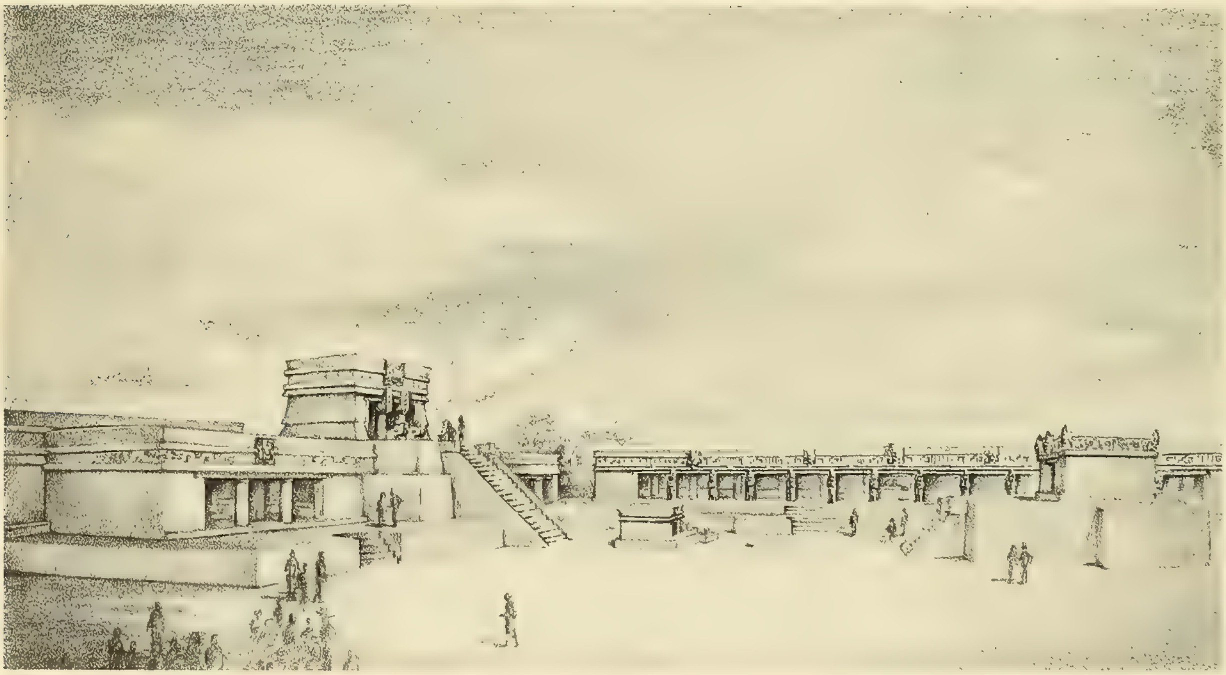

Upper: Perspective view, restored, looking west toward Cenote Ch'en Mul from Str. Q-142a. At right, colonnaded hall, Str. Q-151, with small shrine, Q-152a, seen above it. The hall is grouped with the shrine Q-148 (left) and the oratory Q-153 (left of center) built on the edge of the cenote. At center background is the Castillo, and at extreme left background the serpent-column temple, Q-159. Between them, thatch roofs on Str. Q-160.

Lower: Perspective view, restored, looking south toward the colonnaded hall Q-145, from the Caracol. Shrine Q-148 has been omitted from the picture to clear the view. At left, the serpent-column temple Q-143 flanked by the oratory Q-142a (foreground) and the subsidiary colonnaded hall Q-144. At center foreground is the statue shrine Q-146, and a small masonry altar or platform, Q-147. At extreme right, shrine Q-149. There is no evidence that the colonnade of Q-145 had sculptured stucco figures. These are restored on the basis of remains of figures on Str. Q-156, just to the east of this hall.

PART 2

CIVIC AND RELIGIOUS STRUCTURES OF MAYAPAN

Tatiana Proskouriakoff

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2. Plans of Group J-111, Group E-11, and of Str. Q-225.
3. Details of masonry and restored mural of temple or shrine.
4. Masonry and structural details.
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6. Serpent-column sculptures.
7. Serpent heads and fragments of stucco sculpture.
8. Miscellaneous tenoned heads and ring sculptures.
9. Stone idols.
10. Idols, banner holders, and altars.
11. Miscellaneous monuments.
12. Paneled stelae.

PLAN OF THE MAIN GROUP AT MAYAPAN and MAP OF THE RUINS OF MAYAPAN

(in back cover pocket)

Plates 5 to 12 were drawn by Jan Cirulis, Cambridge.

THE COMPOSITION OF CEREMONIAL GROUPS

Unlike older cities of Yucatan, which often consist of a number of distinct groups of ceremonial structures, Mayapan has its main religious buildings clustered closely around its great temple, or "Castillo," located on the map of the site (see back cover pocket) in Square Q. This we call the Main Group. Another small assemblage, within a hundred meters to the east, might be considered an extension of this group. Several single ceremonial structures and groups of two or three are scattered through the city, but the only other sizable assemblage is at Itzmal Ch'en, a cenote near the northeastern corner of the map, where there is something in the nature of a minor ritual center. The organization of building types within the larger groups was not apparent from the initial survey. More detailed plans of the Main Group (see back cover pocket) and of Itzmal Ch'en (fig. 1), made during the 1952-54 field seasons, revealed that the closely packed assemblage of the Main Group consists of more or less distinct subgroups in which similar constellations of building types figure repeatedly.

The state of ruin of most of the buildings is such that it is difficult, with no major excavation, to reconstruct even the essential features of the building plans. Once examples of outstanding types had been uncovered and studied, however, it became possible to draw plans with a minimum of surface indication, and we have succeeded in identifying the types of all but a few of the principal buildings. For the purposes of the plans, minor excavations were resorted to only to locate corners of substructures so as to place the buildings in their true orientation or to check on the presence of identifying features. In this the author was fortunate to have had the help of H. E. D. Pollock and Gustav Strömsvik, who at various times took charge of the excavations. Ann Chowning and Donald Thompson worked out the individual plans of the group at Itzmal Ch'en, and Karl Ruppert and A. Ledyard Smith contributed their notes on various small outlying groups that the author had no opportunity to observe.

Although considerable uncertainty remains about the relations of the individual structures to one another in the Main Group (see plan in back cover pocket), it is possible to discern two assemblage types, which appear to be standard. These will be referred to as the "basic ceremonial group" and the "temple assemblage."

In both, an important, if not the principal, unit is a colonnaded hall, which we think probably served as living quarters for unmarried boys being trained in the arts of war and ritual. We do not know very much about the educational system among the Yucatan Maya, but Landa mentions a "large house, whitened with lime, open on all sides, where young men came together for their amusements" and adds that "Almost always they all slept together here also until they married." (Tozzer, 1941, p. 124.) In Tenochtitlan, such men's houses or "bachelors' halls" were called telpuchcalli and were apparently scattered through the city, for no mention of them is made in the list of buildings near the Great Temple given by Sahagun (1829-30, book II, appendix). Special quarters for men being trained for the priesthood and for those who retired from family life in preparation for important rites were called calmecac in Mexico and were associated with specific temples. In Mayapan, we have been unable to identify as men's houses any constructions in residential districts, and since colonnaded halls are much more numerous than temples in the center, we believe that they represent both religious and semisecular institutions. The distinction, however, rests more on the position of the colonnaded hall in respect to other buildings than on any peculiarities of plan, though some of the variations may be significant.

If we do not count Structure Q-97a, a mere addition to another hall, there are at least 21 colonnaded halls in the Main Group, 1 other (Str. Q-129) near the east round temple (Str. Q-126), 3 at Itzmal Ch'en, and 1 in Square J—a total of 26. Thirteen of these halls in the Main Group, and at least 4 outside it, we judge to be major independent units that might correspond to something like the men's house, or telpuchcalli. It should be understood, however, that this is a tentatively suggested analogy and in no sense an identification of the buildings. The number of such independently located halls is close to what Roys (1957) has estimated as the number of provinces under the hegemony of Mayapan, and it is possible that each of these halls served the nobility of a specific province.

The suggestion that colonnaded halls were secular or religious lodging quarters for men, rather than public or administrative buildings, is based largely on the character of the typical plan, which resembles that of a large house lacking the privacy of rear compartments. The typical hall is a long room with an open colonnade on the façade and a second longitudinal row of columns on the interior, often a little more widely spaced. A bench along the end and rear walls is interrupted in the center by a slightly narrower and higher altar. Such altars were often found partly destroyed by the removal of a cache in ancient times. Small shrines built around the altars seemed to be later than the original constructions. Their walls probably did not rise to the ceiling, but were capped by a separate roof, like the walls of small shrines in the temples of Palenque.

At one end of the hall, or at each end, there is often a transverse room, also open on the façade. Rectangular or L-shaped piers form the corners of the building, and if the transverse room is lacking, the end wall turns to form an "ante" on the façade. Thus the façade of a colonnaded hall is essentially that of a long building with a multiple entrance not unlike some of the palace structures at Piedras Negras, and the resemblance is heightened in halls that face in both directions and have a medial wall and end rooms.

As a rule, in front of the hall is a broad terrace ascended by a wide stairway of about five or six steps, divided in the center by a small platform or shrine designed to hold a stucco statue. Structures Q-69, Q-154, and Q-157 have, instead of a stairway shrine, a small platform or shrine in front of the left corner of the substructure platform. Behind several halls, we observed a projecting terrace showing vague traces of walls and benches. Here there were evidently perishable structures from which food and services were supplied. These constructions support the suggestion that colonnaded halls served at least for temporary lodging, and an additional confirmation is supplied by the presence of heavy deposits of household pottery within the ceremonial precinct.

To form a basic ceremonial group, the colonnaded hall is combined with a raised shrine and an oratory. The word "shrine" is applied to small cell-like enclosures usually containing an altar or a statue. At Mayapan we distinguish three major kinds: interior shrines, such as enclose the altars of colonnaded halls; statue shrines, which are usually just large enough to house a stucco figure and which often occur on stairways or on low platforms in front of temples; and raised shrines, which stand on independent substructures, some being quite elaborate and resembling small temples. This last type forms a unit of the basic ceremonial group when the shrine stands on a block-like substructure about a meter or two high, facing and centered on a colonnade. Usually such a shrine is a small one-room structure, but some have doorways with columns and even interior partitions. Several contain a simple bench altar against the rear wall; others are bare of furniture; at least one shrine of this type contained a stone statue.

A little farther removed from the hall, we often find a building which we propose to call an "oratory" (e.g., Str. Q-82). In Current Report 25, Thompson and Thompson discuss the occurrence of religious buildings in house groups and suggest that they were used by male members of the family for retirement before important ceremonies. Probably the oratories of the ceremonial groups were used for similar purposes. Before the detailed plan of the Main Group was drawn and the assemblage could be studied, these buildings were regarded as small temples, and Strs. Q-82 and Q-153 were so described in Current Reports 14 and 21, in Year Book 52, pp. 264, 265, and in other early reports. The presence of benches in these buildings, however, the similarity of their plans to those of religious buildings contained in house groups, and the subordinate position they sometimes hold in respect to larger temples have led us to place them in a separate category and to call them "oratories."

The plan of such buildings is fairly distinctive. They are roomy structures set on a foundation of medium height, normally attached to other structures. There is a wide doorway divided by two columns, and on the interior are two piers or, more rarely, columns, which in some buildings were later incorporated into the front wall of an interior shrine. In the center against the rear wall is an altar, and a bench runs behind the piers and on the sides. The building is usually set back on its substructure, leaving a wide terrace in front. The plan is very similar to that of private oratories, which, however, are smaller and more often use columns for interior support.

The basic ceremonial group, composed of the colonnaded hall, the shrine, and the oratory, with their associated services, can occur independently or can enter into combination with important temples. In the typical temple assemblage, a pyramid temple with serpent columns (e.g., Str Q-143) stands at right angles to the colonnaded hall, and the shrine, which remains roughly centered on the hall, is turned to face the temple. Between the shrine and the temple, at the foot of the temple steps, is a low, irregular platform for stucco statues. The oratory is placed to the right of the temple, and in one assemblage another, smaller colonnaded hall is added on the left. Such subsidiary colonnaded halls, directly associated with temples, may have been designed specifically for young men being trained for the priesthood, or for more public use such as the accommodation of pilgrims to the temple. In most essential respects they are like the independent halls, but their plans are more variable, and a definite type is difficult to draw. Three that are attached to pyramid temples have an additional range of columns and face in two directions. Two that are next to round buildings are freestanding, and at least one of these, Str. Q-87, has interior piers like an oratory. The status and affiliation of three others, Q-87a, Q-88a, and Q-220, are very uncertain.

Not counting the round temple of the eastern extension, we believe that there are only 10 structures in the Main Group that can properly be regarded as temples. The Castillo (Str. Q-162) is the largest. It is very similar to the Castillo at Chichen Itza, and its plan is unique at Mayapan. There are three other pyramid temples with serpent columns, each of which forms a focus of a temple assemblage. A fourth pyramid temple, Q-58, is a somewhat aberrant example of the same type. There are two round temples: Q-152, which is not unlike the Caracol at Chichen Itza, and which is itself sometimes called the "Caracol"; and Q-214, which is combined in a single group with the temple assemblage of Q-212, 218. The three remaining temples, Q-80, Q-95, and Q-141, do not conform to recognized types. Q-80 may form part of the group Q-64, 58, which is a somewhat aberrant temple assemblage; Q-95 is loosely integrated with the basic ceremonial group of Str. Q-97; and Q-141 may be something in the nature of a glorified shrine or oratory, making an unusual arrangement with the colonnaded hall Q-142 and a small accompanying structure.

The grouping of the buildings on the north court of the Castillo is difficult to explain. Perhaps the entire court is best regarded as a single large group containing several colonnaded halls. Nevertheless, one has the feeling that the two halls Q-70 and Q-72 might be grouped with the Castillo and its two attached colonnaded halls, while the entire northeast corner of the court, including the colonnaded hall Q-81, is more closely linked with the Caracol. An arbitrary division into four groups is suggested simply for convenience in considering the problems of the affiliation of individual structures, which will be described after brief discussions of the construction methods used at Mayapan and of architectural ornament.

REMARKS ON THE CONSTRUCTION OF CEREMONIAL BUILDINGS

The site of Mayapan is covered with a very thin layer of soil, and as one walks through the city one sees outcrops of rock everywhere. The rock is limestone of poor quality, often containing shell inclusions, but it could be used as building material to avoid transport of stone from distant quarries. There is reason to think that some large slabs of bedrock were split off and utilized in situ. Aside from native rock, there were available numerous well faced, squared stones, of limestone of much better grade. They evidently came from dismantled earlier buildings of the style and workmanship characteristic in the Puuc region of Yucatan. The source of these stones still puzzles us. Nowhere in Mayapan were there found any traces of construction of earlier periods from which such stones could have been taken. However, there were apparently early buildings at Telchaquillo, a kilometer and a half north, and at the small site of Santa Cruz, southeast of the main ruins (Current Report 18), and building material may have been brought in from such near-by sites, or others like them, abandoned when the capital was being built. Although we think that the stones were of local origin we generally refer to them as "Puuc stones" (fig. 4,k-p).

There was undoubtedly plenty of wood both for roof construction and for the burning of lime, and cenotes provided water for mixing plaster. Plaster was used in large quantities for the outer coating of all constructions and for the paving of the courts. For mortar, the burnt lime was mixed with a native marl called sascab of varying quality, often containing an admixture of earth and pebbles. The earliest floors of the court north of the Castillo are laid almost directly on bedrock, leveled with pockets of soil and debris. The leveling was carried no farther than necessary, and the terraces of the surrounding buildings show outcrops on the surface. Most of the substructures of the major buildings thus rest in part on fill and in part on bedrock, which is nowhere deep below the surface. Just southwest of the Castillo is a sharp knoll which seems to be a partly terraced natural rise, and back of it is another spur that was never completely encased in construction. Both to the south and to the north, in peripheral courts, small outcrops remain unleveled here and there. Aside from these irregularities, the highest ground is just north of the Castillo, the site sloping gently down in all directions (see elevations on plan in pocket). The areas between the principal buildings were paved with good plaster floors, of which traces still remain. The floor was usually leveled by a layer of broken rock or debris, on which was laid a finer layer of crushed stone and sascab before the final coat of plaster was added. The surface was well smoothed, and some protected interior floors show traces of paint or stain. Near altars and other ceremonial features, floors are often blackened by burning, and in some places ash and traces of copal remain.

Most of the buildings are raised on substructures filled with large broken chunks of limestone piled between dry, roughly laid retaining walls of the same material. This fill shifts easily when the walls are displaced and makes deep trenching difficult. The outer masonry of the terraces is highly variable. Usually the facing stones are crudely hewn blocks or slabs laid horizontally with virtually no coursing and with thick, heavily spalled joints of mortar (fig. 4,a-d). It is difficult to judge how much lime was used in this mortar, for most of it has leached out with time, and it now has the consistency of earth. Occasionally, in the facing of rough terraces, huge slabs were set upright and the spaces were filled with smaller stones (fig. 4,i). Small platforms, on the other hand, were sometimes finished with moldings assembled from Puuc stones or from small, well shaped blocks, and their walls include occasional upright veneer stones (fig. 4,f-h).

Terraces normally have vertical or steeply sloping walls, sometimes rounded at the corners (fig. 4,a-d). It is not unusual to see odd column drums utilized to form the curve (fig. 4,e). There seems to have been no standard design for the moldings that occur. Apron moldings, somewhat like those of the Peten but not so deep, rectangular moldings, and two-member moldings resembling those of Puuc buildings have all been observed on substructures (fig. 4,b,c,f-h). Behind stairways, such moldings are interrupted, although the terrace wall is normally continuous. Some stairways, however, are built as a unit with terraces and backed only with a rough retaining wall; the top of such stairways may be set in from the edge of the platform. When high enough, stairways are flanked by sloping "balustrades" ending in a vertical, slightly projecting member at the top. Lower stairways often have only rectangular masonry blocks at the sides. Steps and risers usually run approximately equal, between 20 and 30 cm, except when the stairway is very low. Veneer stones were preferred for risers, but when native stone was used it was sometimes laid flat, with two stones forming a riser. Throughout the construction, there is very little standard in practice, probably because thick coats of plaster covered up irregularities.

The masonry of building walls also varies considerably, even in a single structure. Walls are usually set directly on fill and are normally between 50 and 70 cm thick, the facing stones almost meeting at the center, with occasional small stones filling the gaps. On interior walls, vertical Puuc stones are not infrequently included among ordinary blocks, and there is sometimes irregular coursing (fig. 3,b). The mortar varies in quality, but all walls had a thick outer coat of plaster containing a high proportion of burnt lime.

Columns were normally built up of low round drums between 45 and 75 cm in diameter and 20 to 30 cm high. The drums are not truly cylindrical and had to be leveled with spalls, the thick joints providing good ground for plaster. Often the diameter of the several drums used in a single column was not uniform, and the builders depended on plaster to smooth out the contour of the column. Better-fitted and more accurately cut drums are sometimes found in the larger house structures just outside the Main Group, and it is significant that these mansions of the wealthy show finer masonry workmanship than any of the religious structures. Occasionally shafts of columns were wholly or in part monolithic. This is usually true of serpent columns, which will be described with other architectural sculptures. In a colonnade, columns are aligned longitudinally, parallel to the façade of the building, and an interior row is usually spaced more widely and sometimes has larger columns. The columns have no bases, and evidently no capitals, unless round capitals were simulated in stucco, as was sometimes done at Tulum. Apparently wooden lintels rested directly on the shafts and may have been slightly set in from the face of the wall. It is reported that a stone lintel spanned the doorway of the Caracol, but this is unusual, and elsewhere stone lintels were used only for minor interior doorways.

Jambs were often made of large, well squared stones the width of the wall, with the lowest stone of considerable height and set deeply into the fill (fig. 3,a), but this practice, as so many others, was not followed consistently, and there are many exceptions where ordinary masonry was used in doorways.

The only partially standing vaults in the ceremonial precincts are those of the temple, Str. Q-80, and of the Caracol, Str. Q-152. Both structures have unusually thick walls. Debris indicates that other round buildings were also vaulted. Vault masonry, like the masonry of walls, was irregular, made up mostly of thick corbeled slabs, but occasionally also using some stones cut on a bevel and even tenoned Puuc veneer stones (fig. 3,c). The stepped effect of corbeled slabs was undoubtedly smoothed out by plaster. There is a slight offset at the spring of the corbel about 2 m above floor level. The shape above this is difficult to judge, since no vault is fully preserved, but, even allowing for the displacement of weakened masonry, one gets the impression that the soffit was slightly recurved and irregular, varying at different points along the length of a room. The majority of the buildings were unvaulted and had composite roofs of wood and masonry. The debris of such roofs forms a deep layer of plaster on the floors of the buildings. The plaster is mixed with small stones, and preserved pieces indicate caps that were at least 15 cm thick. In a few burned buildings, fragments of charcoal still retaining the form of round beams, 9 or 10 cm in diameter, were found. The beams were probably spaced and set into masonry, with a layer of small poles laid on them at right angles to support the plaster cap. In one building, however, thin slabs of limestone apparently underlay the plaster.

In two locations, where colonnades abut the terraces of the Castillo, fragments of roof cap are preserved at heights of 3.55 and 3.85 m above the floor levels of the buildings. Since the roofs probably sloped from these points, and the floor levels could be measured only at some distance away, the height from plinth to cornice was no doubt somewhat less, probably at most 3.40 and 3.70 m. In the taller building there were noted two holes in the masonry, the first about 70 cm from an end wall, the second 80 cm on center from the first, where beams may have been set. These holes were 2.76 m above the plinth, and, allowing a minimum of 15 cm for the beam and its mortar base, and 20 cm for the cap, we get a result of 3.11 m as probably the least height of the cornice. The average of the two estimates is 3.40 m, which very likely is not far from the true figure. Smaller buildings such as shrines were no doubt lower than this, though roofs of some that were set up on substructures could have been raised by masonry or on wooden frames to give them greater height.

A few ceremonial buildings have left so little debris that we suspect they may have had thatch roofs, and many small shrines must have been built partly or even entirely of wood. Wooden construction with masonry benches was certainly used for the small houses and service buildings, such as kitchens and storerooms, that are found in the vicinity of colonnaded halls.

ARCHITECTURAL ORNAMENT

Since no outer walls of Mayapan buildings stand above doorway height, we have virtually no information on the usual treatment of the upper façade, except by analogy with buildings of the east coast of Yucatan, which tend to be better preserved. Except for simple moldings, the decoration was probably executed in stucco or painted, for we find beveled or sculptured stones only exceptionally. The temples portrayed on a mural in Str. Q-80 (Current Report 30 and fig. 3,d) clearly show the use of two-member moldings, which conceivably could have been built up of small stones and plaster, but simple rectangular moldings were probably more common. The temple representations show a curious mixture of Mexican and Maya design, the moldings being like those of the Puuc architecture, while the lower façade is made up of two sloping zones in the Mexican manner. The lower sloping zone occurs at Mayapan on four serpent-column temples, on one round temple, and possibly on one oratory. In none do the walls stand above this zone, and if a slightly projecting course were placed above it and heavily plastered, it could merge with a vertical wall above to give the effect shown on the mural. The sloping zone is usually faced with veneer stones and is integral with the wall.

Stone sculpture had few standard architectural forms at Mayapan. One of the most common is the serpent tail, used to support the lintels of serpent-column doorways. The tail is carved in the form of a right angle, one leg of which is decorated with cascabels or rattles (fig. 6,a-h). The column shafts of these buildings are at least in part monolithic and are encased in a very thick coat of plaster, on which the body of the serpent may have been painted, although none now shows traces of color. The heads of the serpents, when of stone, are carved separately from the shaft, and often clawed forefeet are added to them (fig. 6,j). They usually rest on low plinths and are slightly removed from the shafts, to which they are linked with masonry and stucco. Some were entirely of stucco, and on the columns of Str. Q-159, on which some stucco remains, a minor grotesque figure is shown apparently behind the serpent head, which is entirely destroyed (fig. 7,s). Similar serpent heads were sometimes placed also at the foot of stairway balustrades.

The façades of some colonnaded halls were decorated with almost life-size human figures in high relief, modeled in stucco on the shafts of the columns. The remains are fragmentary (fig. 7,p,r), but sufficient to show that the figures stood in full front view, with toes pointed outward in the Classic Maya manner. Scattered drums have been found with projecting bosses on which the heads of such figures may have been modeled.

The piers and front corners of the colonnaded hall Str. Q-151 were decorated with masks reassembled from Puuc elements. The assemblage shows some irregularities, but probably followed the original pattern of the design fairly closely. The collocation of masks immediately on the plinth recalls the design of the Codz Poop at Kabah, and it is this style and the late style of Uxmal that the scattered Puuc sculpture of Mayapan most closely resembles (fig. 5). The occasional occurrence of elements similar to those of the Puuc, but carved rudely and of poor stone, suggests that designs of reassembled elements were sometimes completed by native workmen in stone or stucco. Among the most common elements so duplicated are dentate stones and moldings of the guilloche or bead-and-pleat motif (fig. 5,gg,ff,kk). By far the greater part of the sculptured material of the Puuc style, however, was simply incorporated in masonry and coated with plaster, obliterating the relief.

Among architectural sculptures that cannot be clearly attributed either to the Puuc style or to that of Mayapan are the three well carved human heads that were found in the debris of Str. Q-149 (see fig. 8,c). Two were lying on the edge of the debris on the north side of the structure; the other was found on the terrace in front of the doorway of the shrine. The tradition appears to be Maya, and the location of the heads suggests their use in the upper façade.

Also aberrant are six well carved serpent heads with tenons (fig. 7,b-e), two of which were found in a location suggesting that they were tenoned into the vertical blocks above the balustrades of Str. Q-82. A fragment of another was found near by; two were in the court north of the Castillo; and the last was found on the sacbe or causeway near Str. Q-243.

Low-relief sculpture in the Main Group is limited to Puuc-like elements and stelae. A few examples of rude sculptures with animal motifs, however, are reported from outlying groups. On Str. Z-8b are two panels that may have been jambs of the building carved in the semblance of a male and a female monkey (fig. 11,b,c). Structure Q-113a evidently had monolithic columns on which lizards are shown in relief (fig. 11,o). In another location a column drum was found blocked out in the form of a turtle.

It is clear that the visual effect of Mayapan architecture depended almost entirely on high-relief stucco modeling and on painted decoration. Although we have no examples of painted decoration surviving on exterior walls, it is indicated in the representation of temples in the mural in Str. Q-80. Bits of modeled and painted plaster as well as fragments of murals are reported from various locations, but all except the preserved mural in Q-80 are too fragmentary to give any idea of the character of the designs. In Str. Q-95 (Current Report 14, fig. 4,c) were found several superimposed designs on plaster, each with a different color scheme and design. Samples from several locations were examined by Anna O. Shepard, whose notes on the pigments follow:

Pigments on eight fragments of stucco were examined microscopically using the petrographic microscopic and refractive liquids to determine optical properties. The effects of heating to redness in air were also noted.

The coarse, porous stucco of these samples bears a lime plaster coat as a base for painting, but the surface was not well smoothed; in addition to being uneven and sometimes grainy, it frequently shows coarse striations, presumably left by the wiping strokes with which it was applied.

The colors are so dulled by stain and in some fragments so altered by secondary deposition of calcite that definition with reference to a color standard would be meaningless. The range of pigments is limited to ochers, Maya Blue, a green which is probably a mixture of Maya Blue and ocher, and carbon black. Variation in value or depth of color was obtained by mixing lime with certain pigments. Value is also affected by differences in thickness of coat, the thicker applications having complete covering power, the thinner ones being uneven and streaky or uniform but sufficiently thin to be modified by the underlying white plaster. The following pigments were identified.

Red with crystals of specularite. A pigment having the dark red color associated with specularite paint from other parts of Mesoamerica. The refractive index is distinctly lower than that of hematite, a fact that may be explained by the presence of clay, the paint being a red ocher rather than a pure hematite.

The specularite plates are not numerous or conspicuous. On several samples they were not detected with the unaided eye.

Red without specularite. In physical properties this is similar to the red with specularite. The color seen in a fresh surface is more orange, but the difference is not readily recognized on the weathered, discolored surfaces these samples present.

Deep yellow. A highly calcareous yellow ocher. Minute grains of calcite are uniformly disseminated through the ocher. The uniformly fine texture and intimate admixture of ocher and calcite suggest that this is a natural product rather than an artist's mixture. When heated in the oxidizing flame of the blowpipe this pigment changes to a dark red.

Light greenish yellow. The greenish cast of this pigment is more pronounced when it is viewed under the binocular microscope. Stray minute particles of blue indicate that it is a mixed pigment. In the homogeneous part of the pigment, however, only calcareous ocher can be seen. A comparison with green pigments indicates that the blue may be masked by the yellow. Calcite, if added to lighten the color of this pigment, cannot be distinguished from the calcite occurring with the ocher. Paleness of color may be explained by thinness of coat rather than by dilution with white.

Deep blue. This pigment has the optical properties of Maya Blue, an unusually stable pigment having a clay base and a coloring agent that has not yet been identified (see Gettens, in Ruppert, Thompson, and Proskouriakoff, 1955, p. 67; and Shepard, in Year Book 57, p. 453). On heating at relatively low temperatures the blue color is destroyed, leaving a white clay having the same refractive index and interference color as the original paint. One sample turned gray on heating, a change indicating the presence of organic matter.

Light blue. This color, which forms the background for a red and black line pattern on one fragment and the ground for deep blue fringed lines on another, is a tint of the deep blue made by mixture with calcite. Although such tints are not uncommon among the pigments of post-firing-decorated pottery of Mesoamerica, proof of admixture might be questioned in view of the difficulty of obtaining a sample free from plaster, owing to the softness and rough surface of the plaster. In some of the pigment examined, however, minute grains of calcite occur within the blue particles, which leaves no doubt that this is a mixed pigment.

Green. This material appears homogeneous with the exception of rare, minute, blue and even more rare yellow particles. The optical properties of the pigment correspond to those of the calcareous yellow ocher. From principles of color mixing and the rare particles of blue and yellow, it may be inferred that the greens are mixtures of ocher and Maya Blue. The uniformity of the pigment, however, and the complete masking of the blue are noteworthy. The difference in color of green on the several samples may be due in part to variable proportions of pigments in the mixtures and in part to differences in discoloration. The scraped surfaces of all the pigments are much clearer and brighter than the unscraped surfaces.

On heating, the greens change first to a brownish gray and then to light red or red brown. As in the Maya Blue samples, graying at low heat indicates carbonization of organic matter. The fact that the yellow pigment from the same fragments as the green did not darken on heating is evidence that this organic matter is not secondary or accidental. Larger samples than are now available would be necessary to determine whether it represents a medium or possibly a dye.

Black. Although this is a carbon black, no structures indicating derivation from charcoal were observed microscopically. Black was used for outlining and also as a thin wash for gray areas.

White. By reserve space technique, the plaster coat serves as white in one specimen.

There is no example of an applied white in the sample submitted, although some of the blue tints approach white.

The absence of malachite, azurite, and cinnabar is noteworthy, although the sample was not large enough to justify the conclusion that these pigments were not used. This qualification also holds for pink produced by mixing hematite or red ocher and calcite, a color not uncommon in stucco painted pottery but absent in this sample of Mayapan pigments from architectural ornament. Tinting by admixture of white seems to have been used largely with blue although possibly also with yellow.

The order of application may be of some interest because the pigments vary in depth and covering power. Successive coats over large areas were not observed. Overlapping at the boundaries between areas of different pigments gives no indication of the consistency in order of application which would be evident had the artist given attention to relative covering power of pigments. Examination of overlaps also indicates that order of painting did not always follow a sequence of continuous areas.

BUILDINGS OF THE MAIN GROUP

The Main Group is approached from the north by a branch of the Telchaquillo-Tekit road that leads to the Hacienda of Xcanchakan (see map in back cover pocket). Just before this branch turns west to by-pass the Main Group, it runs by the abandoned Rancho of San Joaquin, which was occupied and in use in 1841 when Stephens and Catherwood visited the ruins. At this point one leaves the road to enter the ruins through a modern gate in the wall of an old compound about 350 meters square, which encloses all the ancient ceremonial buildings, including a small eastern extension of the Main Group not shown on the present plan (see back cover pocket). It is not known why or when this compound was built, but it appears to be integral with the rancho plan, and may have been used at one time as a cattle grazing area. Old trails or roads run north and south just outside the east and west walls of the compound. Inside as well as outside it, in the vicinity of the rancho, low walls of dry-laid stone crisscross the ruins in a baffling and intricate net. These may be old milpa walls, laid up at various times, for now they exhibit no clear pattern. Taking no account of the contours of the buildings, they pass directly over the mounds and often obscure the details of their plans. The stone was undoubtedly picked up on the surface and often includes column drums and miscellaneous sculptures. The removal of stone for the walls, and for the neighboring rancho, has distorted the normal debris outlines of many of the mounds, and in some locations large masses of secondary additions to substructures were evidently removed. Sporadic digging by treasure hunters has caused comparatively little damage, nor did later digging through debris by archaeologists, who carefully filled-in their excavations, cause any appreciable difficulties in interpretation. The greatest destruction has been to "boundary walls" (Current Report 13), which often were torn down to make later milpa walls, or were built over in such a way that it is now impossible to distinguish the two without digging. Although boundary walls play a very minor role in the ceremonial assemblage and are associated mostly with service structures and adjacent house mounds, their loss makes it difficult to judge whether the house mounds near ceremonial buildings are functionally associated with them, and in general this problem remains unresolved.

The following notes on structures of the Main Group (see plan in back cover pocket) depend on the series of Current Reports (CR) and on the Year Books of Carnegie Institution of Washington (YB) for all descriptions of excavated buildings, and include only the observations made during the survey of the group that do not appear in the earlier series or that pertain directly to the functional grouping of buildings. The order followed in the discussion is the numerical order of structure designations, but reference is always made to the assemblage to which a given building belongs or to a more important building with which a small one is associated. A basic ceremonial group is designated by the structure number of its colonnaded hall, and a temple assemblage by the number of the principal hall combined with that of the temple or temples, except for the court north of the Castillo, which probably should be regarded as a single assemblage, but which for convenience we subdivide into the Castillo Group (Q-162), the Caracol Group (Q-152), Group Q-81, which comprises the buildings of the northeast corner of the court, and Group Q-70, 72, which includes two colonnaded halls on the west side. For no groups are we certain or even reasonably confident that, as described, they functioned as independent units. The most that can be said is that there is a tendency to repeat certain arrangements, which are emphasized by our subdivisions. In forming these, orientation of buildings has been given greater weight than propinquity, but there are numerous buildings for which alternative grouping is possible and the assignment of a building to a given group may be more or less arbitrary.

Group Q-54. This is a basic ceremonial group made up of the colonnaded hall Q-54, the shrine Q-71, and the oratory Q-55. The small chamber Q-72a, attached to the substructure of Q-72, may also belong with this group. The service buildings were probably located on a platform extending west from Str. Q-54 and not shown on the present plan. Structures Q-56 and Q-57, however, may also have served this group. The group can be entered from the court north of the Castillo through a gateway in a heavy wall between Strs. Q-70 and Q-72.

Q-54 Colonnaded hall. Group Q-54. An unusual though not a unique feature of this colonnaded hall is a wing projecting forward from its north end. This wing, like the north addition to Str. Q-97, has a single row of columns and a bench with no central feature. It rests on a plinth, beneath which is an earlier buried plinth, and it is very probably secondary to the hall proper, although no definite evidence of this could be found from surface observation. The main hall seems to have no inner shrine, and no altar was observed, but the bench is interrupted at the center, and it is not unlikely that an altar set against the rear wall at this point has been destroyed, for the wall itself does not show above the debris. In excavating for the southwest corner of the hall, an unexpectedly high floor of plaster was discovered. Although this level seems to be well above the general level of the bench, it was not investigated further. There is reason to think that considerable secondary work was done on this structure and that floor levels were successively raised. The floor level within the hall is more than 80 cm above the level of the front terrace, which must have had a step-up in front of the building. The stairway is badly ruined, but some sort of central feature is vaguely indicated. Immediately in front is an outcrop of bedrock. Behind the structure is a terrace that probably supported service buildings.

Q-55 Oratory. Group Q-54. Although little shows on the surface of this mound, it was clearly a structure of the oratory type, probably with an interior shrine like that of Str. Q-82. The substructure abuts on Q-70, and there are traces of construction at the juncture, whose nature is not entirely clear. There is a wide terrace in front of the building, and a stairway to the south. Although this building is placed in relation to the colonnaded hall very much like the serpent-column temples elsewhere, the associated shrine, Q-71, remains facing the hall, and is not turned in its direction. This strongly suggests that the oratory does not substitute for a temple but is a building of a different class.

Q-56 Service building. Group Q-70, 72, or Q-54. Vague traces of a wall intersection and bench on a low paved area back of Str. Q-55. Probably remains of thatched perishable building.

Q-57 Service building. Group Q-70, 72, or Q-54. Trace of wall and bench. Probably perishable building facing Q-56.

Q-58 Serpent-column temple (CR 14; YB 52, pp. 269, 270, 276, 277). Group Q-64, 58, 80. The substructure of temple Q-58 encases an older pyramid, and the building itself was originally a temple of a different type. The interior shrine, the lack of a sloping lower zone on building walls, and the burial shaft going down through the substructure set the temple off from other serpent-column temples, and there is reason to think that the serpents, in the form of monsters with claws (fig. 6,a,l,o), were added to its design later. The rebuilding of the temple may account for the irregular arrangement of the entire group and for the presence of various small structures in it. Structures Q-59a, 59b (buried in Q-59), 59, and 60 were built on the axis of the stairway in the given order.

Q-59 Platform with Str. Q-58 (CR 14; YB 52, pp. 270, 279). Low rectangular platform with associated round drum altar and traces of stucco statues. Typical of platforms associated with serpent-column temples. It superseded a round platform containing a burial cist, Str. Q-59b. The remains of this platform and the two which follow have been solidified in the condition in which they were found.

Q-59a Platform with Str. Q-58 (CR 14; YB 52, pp. 270, 279). This platform was originally round and contained a burial cist, but later it was converted into a low, square platform. The burial cist was the earliest of the structures aligned on the stairway of Q-58.

Q-60 Platform with Str. Q-58 (CR 14; YB 52, pp. 270, 279). A low, square platform with two stairways and no signs of a superstructure; the latest of the aligned platforms in this location. Contains a rectangular burial cist.

Q-61 Unidentified structure with Q-62. This is now only a loose pile of stone that may hide a small construction abutting the retaining wall which marks the edge of the plaza containing the Group Q-64, 58, 80. The wall is built on bedrock and is not more than 80 cm high at any point. It is topped by a parapet, but a dry-laid recent wall overlies and obscures the construction. The ground outside the wall rises gradually toward the west until it reaches plaza level and the wall peters out.

Q-61a Statue or monument shrine? (CR 17). With Str. Q-62 or Group Q.64, 58, 80. Traces of the corner of a small room, with large upright stone projecting from the debris south of it; the upright stone probably not in position. If the stone is part of the construction, the room may have faced east, but more likely it was a tiny shrine facing south and originally containing the large stone, which may have been a monument or the core of some stucco statue.

Q-62 Dwelling house (CR 17; YB 53, pp. 267, 268, 282). Group Q-64, 58, 80 (?) This structure was excavated and its remains solidified without restoration. It is typical of small houses at Mayapan, with walls built partly of perishable material, and with a thatched roof. A small altar-platform, Q-62a, is centered upon it in front, and a small service building, Q-63, is behind it. Very likely this house served as an adjunct to Str. Q-64 and should be considered part of the larger Group Q-64, 58, 80. An attempt to date its construction relative to that of Str. Q-64 failed, however, and the possibility remains that it was simply a residence encroaching on the ceremonial precinct at some late date when the larger buildings were no longer in use.

Q-62a Altar-platform with Q-62. Small, square platform, faced with a single course of stones and centered on house Q-62. Typical of the class of such platforms found in house groups throughout the site.

Q-63 Service building. With Q-62 or with Group Q-64, 58, 80. Traces of a bench and wall indicating location of perishable structure.

Group Q-64, 58, 80. The affiliations of Str. Q-64 are not entirely clear. It faces but is not centered on the stairway leading to the upper story of Str. Q-80, and it seems more likely that it has closer association with Temple Q-58 and that it was built when Q-58 was remodeled into a serpent-column temple. Structure Q-65 probably served as the shrine of this assemblage, although no remains of a building were found upon it. We have not been able to identify an oratory for the group. Structure Q-66, which is in a proper location for such a building, seems too small to be classed as an oratory, and has been identified provisionally as a subsidiary shrine. Another possibility is that the upper story of Str. Q-80 served the purpose of an oratory. Group Q-62, if it is contemporary, probably provided the services for the colonnaded hall or was the residence of one of its masters. Other buildings included in the group are the three small platforms centered on Q-58: Q-59, 59a, and 60; the small shrine Q-61a; and the unidentified structure Q-61.

Q-64 Colonnaded hall. Group Q-64, 58, 80. The substructure of Q-64 is a rectangular platform about a meter high, with vertical walls made of large irregular stones set on edge and interspersed with blocks. The rear of the platform is virtually destroyed, and projecting from it northward is an irregular pile of stones with scattered pieces reaching into the unbushed area. No construction is definitely indicated here. The hall is set off-center to the west on the platform, with a stairway centered upon it. Columns 63 cm in diameter form the front and interior rows, but the easternmost interior column measures 70 cm and goes down through a bench to a plinth. Elsewhere, the outline of the bench with an interruption in the center is indicated by edges of vertically set stones. There is no sign of construction on the east end of the platform, nor any evidence of its being secondary. The space left, however, suggests an analogy with the conventional transverse end room.

Q-65 Shrine or platform. Group Q-64, 58, 80. This is a low, square platform, not more than a meter high, and so badly destroyed that almost no features appear on the surface; there is no indication whether there was a superstructure. Although it is clearly centered on the hall to the north (Str. Q-64), its orientation is uncertain. By analogy with other groups it should face Temple Q-58, but since it is not well centered upon it, a stairway has been restored on the north, toward the colonnaded hall with which the platform is associated.

Q-66 Shrine? Group Q-64, 58, 80. Although located in a spot where one might expect to find an oratory, this building is in size more on the order of a shrine. It is built against a natural rise of the ground to the south, where bare outcrops of rock can be seen. A low parapet or wall projecting eastward from its substructure marks the southern limit of the temple plaza. On this wall, at its juncture with the building, lies an ordinary limestone metate that is now loose but that once may have been incorporated in the masonry. The building itself is scarcely more than a mound, with traces of walls on the surface indicating a small room of unusually light construction. A faced stone more than a meter and a half long, possibly a fallen lintel or jamb, lies at about the place where a doorway has been restored on the plan. To the west of the building, the terracing of the rise is badly obscured by a milpa wall which runs at an angle to the building and may overlie an older parapet. The stones of this wall have been scattered so that the original contours of the terraces cannot be made out.

Q-67 Service building. Group Q-70, 72? Traces of walls on low, rectangular platform, grouped with Str. Q-68.

Q-68 Service building. Group Q-70, 72? Traces of bench and walls. Probably perishable building serving colonnaded hall Q-70.

Q-69 Shrine (CR 9; YB 52, pp. 273, 274). With Str. Q-70, Group Q-70, 72. Although this shrine does not face the colonnaded hall Q-70, it seems to enter into an intimate assemblage with it and with the small platform Q-78. A low wall connects its substructure with that of Q-70, blocking off the service buildings to the north, and defining the entrance to the court north of the Castillo as the passage between Strs. Q-69 and Q-79a. Q-69 contained an ossuary cist, as did many other shrines of its kind. Its most interesting feature is its association with several stone statues. Fragments of one figure were found on the summit between the door jambs (fig. 9,c). This figure lacks a head, which was a separate piece fitting into a deep round depression between the shoulders. The back of the torso is smooth and almost flat, but the legs, found as a separate piece, have a tenon projecting both downward and back, suggesting that the figure was set in front of a bench or altar. There were traces on this piece of a thin coat of plaster painted red. Sherds of incense burners and redware vessels were scattered in the debris around it. Three sculptured heads were found in the vicinity of the shrine (fig. 9,k,l,o); five other torsos (one with a deep tenon projecting from the back)(fig. 9,d,e,g,h,i); a clasped hand with a pit 3 cm deep between the thumb and forefinger (fig. 9,n); and a carved stone skull. The heads of the standing figures are carved separately from the torsos, and one head was fitted into a groove running transversely to the line of the shoulders. It seems unlikely that all these pieces were directly associated with the shrine. The torso in fig. 9,d, found northwest of the mound, may come from Shrine Q-66. Other statues may have stood southwest of the shrine, on the rough platform which Adams mentions as covering "irregularities in the terrain," or may have been moved from some other structure in the vicinity, such as the shrine Q-79a. Sculptures have been so much moved about in Mayapan that it is difficult to assign most of them to a specific location. The clear association of at least one figure with Shrine Q-69, however, permits us to surmise that others found near shrines were similarly placed inside them.

Group Q-70, 72. Normally each independent colonnaded hall is the focus of a ceremonial group, but we find neither centered shrines nor oratories associated with the two colonnaded halls on the west side of the court in front of the Castillo. The arrangement of the Castillo itself, with its platform Q-77 in relation to these colonnades, strongly suggests the typical temple assemblage, and for this reason we consider them related, although the group so formed is not a complete unit but rather an arbitrary subdivision of the assemblage comprising the whole court. The two buildings are connected by a thick wall, with a gate leading to Group Q-54, but each is a separate structure with small dependent mounds. Q-70 is associated with a shrine, Q-69, and a small mound, Q-78. It may have been served by the perishable structures immediately to the north, Q-67, 68, and possibly Q-56 and 57. Q-72 is accompanied by a platform, Q-74, and a small indefinite construction, Q-73. Behind it is a small shrine, Q-72a, which may or may not pertain to the hall, and there is room here for service buildings, though none was actually observed. Strangely enough, neither of these colonnaded halls, which seem to combine with the Castillo in a single assemblage, is particularly well built or imposing in size. In fact, Q-72 is unusually small for such a building, and Q-70 has such low debris that one might entertain the possibility that it was thatched rather than roofed in the usual manner. Both buildings were separately included in the count of 13 major halls of the Main Group, but their equivalence to the others might with some justice be questioned.

Q-70 Colonnaded hall. Group Q-70, 72. The debris of this building is very scanty for it to have had a composition wood and masonry roof. There is reason, however, to think that a great deal of stone was removed, for a milpa wall runs longitudinally along the façade of this structure and almost all the visible column drums are out of place. The irregularities of the plan, particularly the off-center position of the stairway, were apparently occasioned by a rock outcrop at the north end, where the front terrace rises to clear it. This outcrop is now bare, and it is not certain that it ever was completely covered. The edge of a bench suggests that there was a forward-projecting wing at this end, but no traces of columns or of a rear wall could be seen. The south end of the hall is normally designed, except for a strange jog in the bench, which does not seem to continue along the end wall. In the center there is the usual interruption of the bench with traces of a higher altar set against the rear wall. The stairway is badly ruined but seems to have had some sort of central feature. The southeast pier of the hall was apparently in part encased in a thick wall which projects southward to form the west limit of the Castillo court. At the juncture, this wall is standing to a height of about 2.4 m above the court level, and on it, immediately in front of the pier, are two very large stones that look as if they may have been parts of a monument. Unfortunately, they lie beneath the milpa wall and could not be examined without its removal.

Q-71 Shrine (CR 9; YB 52, pp. 273, 274, 279). Group Q-54. The well made moldings of Puuc stone on the substructure of this shrine are its most conspicuous feature (fig. 4,h). There are indications that stucco statues were set in the low platform at the foot of the stairway, but, as is true of so many other buildings, we have no knowledge of what the shrine itself contained. Its association with Str. Q-54 is beyond question, as it is squarely centered on it, but in view of the evidence of alterations on the colonnaded hall, it may be noteworthy that the shrine shows no signs of major rebuilding. A burial cist is built into the substructure of this shrine. It was excavated, and the structure was then resolidified, with partial restorations.

Q-72 Colonnaded hall. Group Q-70, 72. The milpa wall that runs along Str. Q-70 continues along Q-72; like Q-70, Q-72 has very little debris and most of its columns have been dismantled and incorporated in the wall. All the essential features of a small colonnaded hall, however, including a central shrine of secondary construction and a transverse room, were identified. What remains uncertain is the possibility of a turn of the bench along the north wall of the hall, and the plan of the front stairway, which showed only as a slope of debris. The thick wall separating the plaza from Group Q-54 abuts on the north end of the front platform of Q-72, where again the milpa wall obscures the details of the juncture.

Q-72a Shrine or small chamber. Group Q-54 or Str. Q-72. Projecting back from the substructure of Q-72 is a deep pile of debris, below which can be seen the outline of a low platform. Halfway up the slope is a doorway to a small chamber. The elevated position of this chamber suggests that it may be something in the nature of a shrine. Whether this chamber had an independent rear wall or was built against the terrace of the larger building was never determined, but in any event it must have risen somewhat above the level of this terrace.

Q-73 Low platform of undetermined form. With Str. Q-72? These traces of some low construction centered on the stairway of Q-72, where one might expect to see a shrine platform, are very puzzling. Just to the south appear to be remnants of a "boundary wall" that looks as if it might be of aboriginal construction, but in this location it is difficult to explain. One is inclined to think that these remains have been disturbed and that their original form cannot be inferred from their present condition.

Q-74 Platform with Str. Q-72. Square platform, probably terraced, but with no superstructure. Stairway on the west is certain. Indications of another on the east. May be a small open platform associated with the colonnaded hall, or the base of a shrine of perishable construction.

Q-75 Platform. Castillo Group. Apparently a low, square platform with some sort of projection at north. A loose pile of stone and debris between this structure and the indefinite remains of Str. Q-76, evidently left from some earlier excavation, now obscures the relation between the two structures.

Q-76 Unidentified; Castillo Group. Alignments of stones, indicating some small construction, now almost completely buried by debris in court and by adjacent pile of back-dirt from an earlier excavation.

Q-77 Dance platform(?) (CR 9; CR 14; YB 52, pp. 274, 275). Castillo Group. Originally, before the Castillo was built in its present form, this was a symmetrical platform with four stairways, on the order of the dance platforms or momoztli of Chichen Itza, but of simpler design. In its final form it may have served as a foundation for a shrine, although no clear signs of a superstructure were found upon it.

Q-77a Buried platform in front of Castillo. Not shown on plan. (CR 20.) Castillo Group.

Q-78 Platform with Str. Q-70. Group Q-70, 72. Rectangular platform, now only one course high, faced with large stone blocks. Traces of projection on north side. This platform may once have been higher, as it is clear that some of its facing stones have been removed.

Q-79 Unidentified building. Group Q-81. This single chamber, entered by a doorway with two columns, seems to have had no benches and was probably thatched. In size and plan it resembles the larger unit of Str. T-70 near Cenote X-Coton (CR 11). The terracing in front is very badly ruined, and no clear idea could be formed of its juncture with the front terrace of Q-81. Just behind this structure at plaza level were found shallow burials, associated with many sherds of incense burners (CR 9; YB 52, pp. 272, 273).

Q-79a Shrine(?) Group Q-81. This is a tiny room built against the west wall of Str. Q-79 and overlooking the north entrance to the Castillo court. Probably one of the statues described in connection with Str. Q-69, which is on the other side of the entrance, originally came from this shrine.

Q-80 Temple (CR 30). Group Q-64, 58, 80. This is a unique building, and, although it has been partly excavated and described, its function and its relation to the buildings around it remain obscure. It is classed as a temple because of its high substructure and its massive construction, but the plan of its first story is not typical of temple architecture, and the second story, which must have stood either over the central masonry mass or over the south room, is now completely destroyed. The principal stairway and an upper flight leading to the second story are on the north, but the façade of the first story is on the south, facing the Castillo, and probably led out to the roof of Str. Q-81 when that was intact. The south room contains niches and a mural depicting a row of gaudily painted temples. One of the puzzling features about this building is its off-center position on the substructure. Two phases of the construction of the substructure were observed, but in neither phase was the building centered upon it. There remains the possibility that an earlier phase has escaped observation. As the building now stands, the latest terrace walls, which were built integrally with the main stairway on the north, are almost completely gone, exposing an inner terrace. Although there is still deep debris at the base of this terrace, it looks as if a great deal of stone belonging to the later construction had been removed. This is indicated on the plan by the exposed corners of the inner structure.

Group Q-81. The separation of this group from the Caracol Group is somewhat arbitrary, since the oratory Q-88 is actually more accessible to the adjacent building Q-87 than to the colonnaded hall Q-81 and its dependencies. Nevertheless, the position of this oratory in respect to the hall is so like that of Q-158 to Q-156 or of Q-55 to Q-54 that a similar association seems to be implied. Which of the smaller buildings served as the principal shrine is not apparent, but perhaps it was Q-83, whose mass, if not the plan, is very like that of a shrine. The group as such seems to be a variation of the basic ceremonial group, altered by its adaptation to the larger assemblage of the court. In addition to the hall, we include in this group Strs. Q-79 and 79a, Q-82a, Q-83, and Q-88. Structure Q-84, a low monument platform below, is considered an independent unit, since it does not seem to be centered on any of the standing structures.

Q-81 Colonnaded hall (CR 31). Group Q-81. This colonnaded hall seems to lack an end room, and we have been unable to locate any service buildings connected with it. Nevertheless, its size and prominent position suggest its independence of the temple that towers above it to the north and its closer association with the court north of the Castillo. We have not been able to identify the shrine that is usually associated with such colonnades, but on each side are small structures that may have served this function: Q-79 and 79a to the west, and, particularly, Q-83 to the east, which is elevated on its own substructure with a stairway leading to the area in front of the colonnaded hall. The front terrace of the hall includes a rock outcrop which may or may not have been covered with a floor, and which now protrudes higher than the floor of the terrace to the west of the center. The terrace walls to the east of this rock outcrop are not visible under the milpa walls that are ruined above them, and it is possible that they were designed to cover the outcrop, though this is not shown on the plan. Incorporated into the milpa wall was a fragment of a hieroglyphic stela (Stela 2), designated as fragment a in the description of the monument platform Q-84. It is a large fragment, and, although it was undoubtedly moved, its location in the wall suggests that the stela may have stood on the low platform in front of the terrace of Q-81 rather than with the other monuments.

Because of the great amount of fall from the high terrace of Q-80 behind the building, very little of its plan was visible before excavation. It is still uncertain whether there was an opening in the east wall, or whether the wall stopped short of the façade, allowing for another room at this end. The building has a large interior shrine, which, like others of its kind, is a late secondary construction. A turtle sculpture and several figure censers broken in situ were found in the shrine.

Q-82 Oratory (CR 14; YB 52, pp. 264, 265, 270). Group Q-97, 95. There is no need to comment on this structure, which has been excavated and partly restored, except to note that we now class it as an oratory rather than as a temple. The alignments of stone in front of the stairway and opposite the northeast corner might also be mentioned. The one to the south may be merely an arrangement to raise the court floor over projecting bedrock or to level the stairway to the building. Near the one to the north, however, there are several very large fragments of stone that seem to be the broken remains of a monument, possibly a stela that was set up on a low platform. The pieces are formless, and no attempt was made to reassemble them.

Q-82a Statue shrine (CR 14). Group Q-81. This small shrine is set high up behind Str. Q-82 and faces south on the Castillo court. No traces of an idol were found in the vicinity, but, as the chamber is too small to enter, it undoubtedly was designed to house a statue of stucco or stone.

Q-83 Unidentified (possibly shrine). Group Q-81. This small building proved to be one of the most puzzling structures at Mayapan. It is set on a blocklike substructure well over 2 m high, but the remains are very low, suggesting a building mostly of perishable materials. Nevertheless, traces of two masonry squares apparently indicate the façade of the structure, and behind them are other traces of benches or piers. The plan was never satisfactorily made out. The position and the general form of the structure suggest that it may have been a shrine for the colonnaded hall Q-81.

Q-84 Monument platform (CR 9; YB 52, p. 275). Group undetermined. In court north of Castillo. Originally this was a small, round platform, but later additions greatly modified its form. Its latest facing, which consisted of a single course of stones, has largely disappeared, and its present indefinite form may be the result of the exposure of earlier features. No floor was found on the surface of the platform, and all the monuments and sculptures lying on it, with one possible exception, are displaced. Nevertheless, it seems probable that most of the sculptures lying about, and some found incorporated into a milpa wall that runs east and west across the north end of the platform, were once arranged upon it. These include 6 fragments of sculptured stelae and a seventh that is incorporated into the milpa wall along the terrace of Str. Q-81; 11 fragments of plain monuments, some of which were undoubtedly stelae; and 6 other sculptures, all of which are lettered on the plan and described below:

(a) Stela 2. The top of a paneled stela with an eroded inscription of 24 hieroglyphs, 4 with coefficients. Figure 12,e.

(b) Stela 4. A small, badly eroded stela with a paneled design. Figure 12,c. (CR 9: Q-84-2.)

(c) A large, plain rectangular stone (not measured), possibly broken from a monument (possibly CR 9: Q-84-7).

(d) Fragment of a sculptured stela with badly eroded paneled design on one face. 108 × 55 × 28 cm.

(e) Large but narrow sculptured serpent head with small figure riding upon it.

Figure 7,a. (CR 9: Q-84-1.) This sculpture may be associated in some way with sculpture j but could not be fitted to it.

(f) Rounded top of plain monument. 95 × 60 × 32 cm.

(g) Small idol broken in two pieces. Figure 10,c. The association of this piece with Str. Q-84 is doubtful. It seems more likely that it comes from one of the neighboring shrines.

(h) Fragment of a plain monument. 45 × 40 × 30 cm. Possibly base of fragment i.

(i) Tapering top of plain monument. Figure 11,g. (CR 9: Q-84-2?)

(j) Large sculptured upright monument. Figure 11,f. (CR 9: Q-84-3.)

(k) Fragment of sculptured figure. Figure 10,l. May be stray piece from elsewhere.

(l) Eroded upright stone, possibly in situ; 80 cm high, tapering. (CR 9: Q-84-9.)

(m) Tapering top of plain monument. 109 × 48 × 33 cm. Down about 57 cm from the top of the monument on its broad face is a pit 5 cm in diameter. (CR 9: Q-84-4.)

(n) Fragment of square monument with molding. Figure 11,e. (CR 9: Q-84-5.)

(o) Tapered top of plain monument 47 × 47 × 22 cm.

(p) Large stone (not measured), with traces of carving. Probably fragment of sculptured stela.

(q) Several large fragments, probably from shattered stela.

(r) Tapered top of plain monument 60 × 40 × 30 cm.

(s) Unidentified sculptured fragment. Figure 11,h.

(t) Stela 3? Fragment of sculptured stela, originally about 60 cm wide and 25 cm thick, showing traces of horizontal bands. May belong with fragment x.

(u) Fragment of large plain stela? (Not measured.) (CR 9: Q-84-6?)

(v) Rounded top of stela? 62 × 44 × 22 cm. No signs of carving.

(w) Stela 10. Top fragment of monument with hieroglyphs. Figure 12,b. This piece may belong to Stela 4.

(x) Stela 3? Fragment of paneled stela, probably from same monument as fragment t.

Q-85 (Construction outside Main Group.)

Q-86 Service building (YB 52, pp. 261, 262). Group Q-99. A small, perishable building with masonry benches set on a platform built against the back of the substructure of Q-99. The remains are very low, and the plan is uncertain. A boundary wall apparently surrounded the platform. Part of the platform, which abuts on the southeast corner of Q-99, was excavated by Bullard.

Q-87 Colonnaded hall, atypical. Caracol Group. In some respects this building is like a colonnaded hall, but its interior piers, its hemmed-in position, and its propinquity to the prominent round Str. Q-152 distinguish it from the freestanding colonnaded halls that we believe to have been men's houses. A very similar building, Q-213, adjoins the round temple in the southernmost group. On such slim basis a distinct type cannot be defined, but we might set aside, as of dubious class, these two structures with features analogous both to oratories and to colonnaded halls. Just behind the south pier, a high patch of floor was uncovered, showing that the pier was built against a bench, but the outline of the bench was not followed. We assume that there was some central feature, altar or shrine, within the building, and the debris of the stairway suggests another small shrine in front.

Q-87a Small colonnaded hall. Group Q-99 or Caracol Group. The group affiliation of this unusually small colonnaded hall is very questionable. It faces Q-99, and its roof was probably about on the level of the Caracol terrace; but directly south of the hall is a stairway ascending the terrace of the Caracol, and for this reason we believe that there may have been a connection between the two buildings. The fall from Q-87 completely obscures the interior plan; but the façade of small columns is fairly clear, and its only peculiarity is the apparent blocking-up of the north doorway, which may be a secondary feature. Possibly there was an end room here at one time, eliminated by the building of Q-88a, and perhaps this building once served as an independent colonnade.

Q-88 Oratory. Group Q-81. No stairway to this building was observed, and the only access to it seems to be from the terrace of Str. Q-87. Nevertheless its type and location suggest an association with Str. Q-81, with which it is provisionally grouped.

Q-88a Colonnaded hall, atypical. Group Q-97, 95, or Group Q-99. Like Str. Q-87, this building has an open façade and interior piers, with a plan intermediate between that of an oratory and that of a small colonnaded hall. It is L-shaped, and the peculiar juxtaposition of a column and a pier at the north end indicates some rebuilding. The main stairway with a small shrine on it faces north, and in front of it is a small platform, Str. Q-88b, which suggests an association with Group Q-97, 95. On the other hand, no oratory has been identified in Group Q-99, and the presence of piers in this building suggests that one of its rooms may have served the purpose.

Q-88b Platform with Str. Q-88a. Rectangular platform faced with one course of vertical stones centered on stairway shrine of Str. Q-88a. Near this platform, built into a milpa wall, was a round monolithic altar, 1.60 m in diameter and 22 cm high, broken in half. The original location of this altar could not be determined.

Q-89 Shrine. Group Q-97, 95. No masonry walls show on the summit of this mound, but its rounded contour and its height of more than 2 m suggest a superstructure set on a high platform with vertical walls, probably terraced as shown. The debris clearly indicates a stairway on the east side, facing the colonnaded hall, and the lower terrace appears to have been faced with vertical stones behind the stairway. In the debris at the southeast corner lies the bulbous top of a column altar, which may have fallen from the top of the platform. It corresponds to a similar altar found on the summit of Str. Q-148 (fig. 10,u,v). In both, it seems that the shaft was broken off, and it may be that their association with the shrines is secondary.

Q-90 Shrine (CR 9; YB 52, pp. 273, 274). Group Q-97, 95. This little shrine, though not centered on any large building, is oriented at an angle toward the center of Q-97 and probably had some connection with it. It was evidently built later than the colonnaded hall, for the earliest plaza floor passes under it. Although no sculpture was found directly associated with it, among fragments in the vicinity was a badly eroded freestanding statue (fig. 9,f), which possibly the shrine was built to accommodate. Like other small shrines examined, Q-90 contained a burial cist with several skeletons.

Q-91 Dwelling house. Group Q-97, 95? This house is built on an outcrop of rock in the midst of ceremonial constructions, and, as for Str. Q-62, we did not determine whether it is a service building for the ceremonial group or whether it represents a late encroachment of the residential area upon the ceremonial precinct. Since there seems to be no paved area around it, the point would not be easy to clear up. There are traces of what appear to be ancient boundary walls, one of them forming a lane leading in the direction of another mound, Q-94, immediately behind the temple Q-95. The ancient walls merge with more recent walls, however, and very careful excavation would be required to follow them with certainty. Q-91 is a small house, built mostly of perishable materials. An old metate forms part of the facing of its bench, and two others are set into its foundation on the east side. The building faces north, and along its south edge runs a milpa wall, obscuring whatever remains there may be of a back room. In this wall was found a stone in the form of a small column drum, but tapering toward one end and with a badly weathered boss or projection rudely sculptured to represent a human head.

Q-92 Small rectangular platform faced with single course of stone. Not shown on present plan (see map, back cover pocket).

Q-93 Similar platform; not shown (see map, back cover pocket).

Q-94 Platform. Group uncertain; possibly with temple Q-95. Rectangular platform, one course high, built on bedrock back of Str. Q-95. A milpa wall obscures the east end of the mound, merging to the south with the east wall of a lane.

Q-95 Temple with burial shaft (CR 14; YB 52, pp. 270, 277). Group Q-97, 95. Almost everything about this temple is unusual for Mayapan: its square columns, its lack of a plinth, the deep apron moldings on its terraces, and the absence of balustrades on the stairway. Possibly all these features were more common in the earlier history of the city, for this seems to be one of the few buildings at Mayapan that was never completely rebuilt, though it suffered a number of minor alterations and probably stood for a long time. In its final form, the building contained benches, which normally are a feature of the oratory rather than the temple, and in this respect, although not in other features of plan, it resembles the main temple of Itzmal Ch'en, which will be discussed later in this report. The main alterations of Str. Q-95 were two major enlargements of its substructure, but only at the front of the building were the last phases of these alterations preserved, and even here there is an obvious lack of symmetry that is difficult to explain. Elsewhere, so much of the outer shell of the substructure is missing that we suspect a great deal of it was removed and utilized for the building of the rancho and its compound walls. The rear corners of this outer substructure were never located, and on the plan the second phase is indicated at the northwest corner, although in most locations buried constructions have been ignored.

Q-96 Dance platform? Group Q-97, 95. This platform is centered both on Q-95 and Q-97a. Presumably it is associated mainly with the temple, but if it is a dance platform, as we surmise, performances could be watched very conveniently from the north extension of the colonnaded hall. The platform is lower and broader than a shrine platform, and apparently rose in two low terraces, with no superstructure. On the north and south sides of the lower terrace, a section in the center of each wall is faced with vertically set stones, which may form the backing for steps. The edges of the platform on the east and west sides are obscured, but the symmetrical debris suggests steps on all four sides. If there were, the platform must have resembled Str. Q-77 in its earlier stages and may have been functionally similar to the dance platforms or momoztli of Chichen Itza. Just north of the platform and slightly off-center lies a single column drum or altar. Though this could be merely a stray drum from a near-by colonnade, it is more probably a displaced round altar, belonging either to the platform or to the temple Q-95.

Group Q-97, 95. This group can be divided into two semi-independent assemblages. To the south, the colonnaded hall Q-97 enters with Q-89 and Q-82 into a typical basic ceremonial group. Q-88a and Q-88b may also be related to it, and the small shrine Q-90 seems to be a late addition. To the north, the temple Q-95 dominates the platform Q-96, and this in turn appears to be centered on the late extension to the colonnaded hall, Q-97a, which has no independent stairway, but apparently was entered directly from the hall. Thus the two groups are closely linked together.

Q-97 Colonnaded hall (CR 22; YB 52, p. 271). Group Q-97, 95. This is one of the larger "bachelors' houses" in the center, and forms the focus of a basic ceremonial group which combines with other buildings into a larger assemblage. Behind the hall is a slight rise that suggests the presence of a low platform for service buildings, not shown on the present plan, but indicated on the map of the site. The only unusual feature about the hall is the presence of a badly eroded monument and of a sacrificial altar on the front platform. The author differs with CR 22 in showing the south plinth of the structure as flush with the piers, where a corner stone was observed. The southern addition to the substructure, however, does suggest that the plinth may have been extended later.

Q-97a North addition to Q-97. Group Q-97, 95. This wing added to Str. Q-97 has a single row of unusually small columns, about 45 cm in diameter, and a bench that extends along the rear wall without interruption. The absence of any ceremonial feature in it suggests practical rather than religious use, and from the vantage of its location overlooking the platform Q-96 whatever took place on the platform could be conveniently observed. This gallery seems to have no stairway of its own and could be entered directly from the colonnaded hall to the south.

Q-98 Shrine. Group Q-99. This is a typical small shrine, showing the remains of a small chamber on the summit of a square platform that rises in two terraces. One stone idol and the fragment of another were found in the court near the shrine (fig. 10,a,d). Either of these sculptures may have come from the shrine, and it is not unlikely that the other was on the stairway to Str. Q-87a

Group Q-99. The small shrine Q-98 and the service building Q-86 are the only two structures that can be definitely linked with the colonnaded hall Q-99, but Q-87a, and Q-88a facing it, may be in some way related to the group. There seems to be no typical oratory, but either of these buildings might contain rooms that could serve the same purpose.

Q-99 Colonnaded hall. Group Q-99. Like Q-64, this colonnaded hall lacks an end room but has an extension on its platform to the south. There are traces of a central altar, but no interior shrine was observed. The debris is deep, and bench outlines showed only in a few places. The stairway could not be clearly made out; there were indications in places that it had been covered over by some secondary terracing. Although the associations of this building are meager, it is large and solidly built, with columns 68 cm in diameter, well above the average for such structures.

Q-135c,d Unidentified mounds, probably of domestic type on periphery of Main Group.

Q-135e Orifice, 33 cm in diameter, of a masonry-lined chultun.

Q-139 Service building? Group Q-142. Traces of wall and bench behind Str. Q-140.

Q-140 Shrine? Group Q-142. Like Str. Q-66, this building is atypical for a shrine, though of comparable size. It has relatively light walls (about 40 cm thick) and a wide doorway, which may have been partly filled and made narrower at a later time. The building is set back on a substructure with rounded corners formed of re-used column drums, and with an inset stairway. This design and the crude masonry of the substructure suggest secondary construction.

Q-141 Temple. Group Q-142. The deep debris of this tall building, particularly the collapse of the rear terraces, makes it difficult to determine a plan, and it is not altogether certain that there was not a rear room to this structure. About the only thing clear is the wide two-column doorway of the façade. This and the unusual length of the room suggest a temple on the order of the one at Itzmal Ch'en, having some of the features of an oratory. Although the building is regardec as a temple because of its size and height, it occupies the position of a shrine in the group and directly faces the colonnaded hall with which it is associated. At the base of the southwest corner is lying a sacrificial altar (fig. 10,w), which we presume fell from the upper terrace. Stones carved with the guilloche-and-pleat motif were observed in the debris. The design of the main stairway of this temple is very uncertain. There is reason to think that some secondary construction is involved, both on the lower terraces and on the building above. There is also a low secondary wall shutting off the passage between this structure and Q-151. Part of a broken serpent head and a fragment of a feather headdress are among sculptured stones lying near the temple. Most of the stones, however, are mask elements from Str. Q-151.

Group Q-142. None of the buildings of this group are of typical design, and the arrangement itself, with the high temple Q-141 directly facing a colonnaded hall Q-142, is unusual. Perhaps the best interpretation of this group is that it is a temple assemblage of the sort we find at Itzmal Ch'en, in which the functions of the temple and the oratory are combined. The placing of the shrine, Q-140, to one side, and the location of a service building, Q-139, behind it, do not conform to the usual pattern.

Q-142 Colonnaded hall (YB 53, p. 279). Group Q-142. This hall has an unusual form because of the wings projecting forward on each side, but these are additions that do not alter its essential nature. Originally, the west wall of the hall proper was probably a dividing wall between the hall and a transverse room, for it ends in a large jambstone, facing north. We assume that with the construction of Q-142a, which would have shut off the view from such a transverse room, the plan of this end of the hall was altered. The south wall of the west wing abuts the side of the original jambstone, and the west wall is built against the back wall of Q-142a with no outer facing. These circumstances demonstrate that the west wing is later than Q-142a, and suggest that the original hall was earlier. Like other additions to colonnaded halls, the west wing has a single row of columns and a bench trimmed with a simple rectangular molding. Apparently there is no central ceremonial feature. A small excavation showed that this structure had a beam-and-mortar roof, destroyed by fire. A carbon 14 reading from a burned beam resulted in an estimate of about A.D. 1360 for the erection of the west wing (see p. 8, Gro-450).

The shrine in the center of the main hall is probably secondary, like other such shrines, and incorporates two originally freestanding columns of the interior row. To the east of the hall are traces of another small addition, of which only a pier and a bench behind it are visible. A few column drums in the debris suggested the reconstruction of a small room, but the plan here is very uncertain.

The wide terrace in front of the hall is crossed by a step before the main stairway is reached. The construction of a small shrine is indicated on the stairway, and in front, set against another step, and still in place, is a column altar with a round top (fig. 10,t). Some distance to the east, in front of the eastern wing, lies a large worked stone that may be a small, plain stela.

Q-142a Oratory? (YB 52, p. 279). Group Q-145, 143. Only the outer walls of this building can be seen above the debris, but its proportions, the lack of visible column drums, and the wide doorway strongly suggest the plan that has been restored. Although its identification as an oratory must remain questionable, the probability is enhanced by the fact that the building is one of a group that is otherwise typical and that includes a colonnaded hall, a temple, and a shrine in their most usual arrangement. Originally the building was built against the substructure of Q-143 but stood free of Q-142, whose west wing was added later. It is considerably lower than Q-142, and there is no indication that the two are functionally related.

Q-143 Serpent-column temple (CR 32). Group Q-145, 143. The back-dirt of previous excavations now obscures the front terraces of this building, but so far as we can tell there were two terraces, rising to a height of about 5 m. The temple itself is typical of serpent-column temples, and the partition inside is a secondary arrangement, incorporating a number of well carved Puuc stones. The anteroom is slightly higher than the sanctuary, which contains a central altar set against the rear wall. There is a slope on the outer walls faced with well cut vertically set stones, above which the wall is destroyed. The serpent heads of the columns are carved of stone (fig. 6,i), but are set well in front of the columns and are connected to them by stucco, in which the monolithic shafts of the columns are also heavily encased. Fragments of two carved serpent tails were found (fig. 6,c). One had a tenon on top for the addition of another element, but no fitting pieces turned up in the digging.

Q-144 Colonnaded hall attached to Q-143. This colonnade faces in two directions and is unusually small. There probably were two rows of columns on the west side, although the interior row was not visible. A central altar, however, was indicated. It is not quite clear whether this building actually abuts the terrace of Q-143 or stands free. The debris looks solid, as if a solid mass of masonry projected from the terrace, but there has been a great deal of fall from above that obscures the juncture.

Group Q-145, 143. This is a good example of a complete assemblage including a colonnaded hall Q-145, a shrine Q-149, an oratory Q-142a (somewhat uncertainly identified, however), and a serpent-column temple Q-143 with its attendant structures: an attached colonnade Q-144, and an irregular platform for statues Q-146. In addition, included in the group are two small platforms Q-147 and Q-154, and service buildings Q-145a, behind the colonnaded hall.

Q-145 Colonnaded hall. Group Q-145, 143. Although this is one of the larger colonnaded halls in the Main Group, it has neither an interior shrine nor an end room. There is no indication of a statue shrine on its broad stairway, though one may be concealed under the debris. The design of the hall is very simple, with a bench running along the back and end walls, interrupted in the center by an altar. The bench is unusually low, only 42 cm above the plinth and less than 40 cm above the floor next to the bench. The altar has a very low step of plaster in front of it and is 93 cm high. It has a rectangular molding at the top 35 cm deep and projecting 8 cm. A single coat of plaster 2 cm thick covered the altar and the benches (fig. 4,q).

Q-145a Service building for Q-145. Back of Str. Q-145 is a broad raised area on which are very low and indefinite traces of construction. We suppose that these were service buildings for the colonnaded hall, although it must be admitted that there is no apparent means of direct access to the hall from its rear platform. There is always the possibility of missing a small doorway in the back wall, where the debris is usually deepest, but nowhere was such a doorway observed. Nor is there any sign of a stairway by which the terrace supporting the perishable buildings was ascended. Unfortunately very little digging has been done in comparable structures, and we have virtually no information that bears on their design.

Q-146 Statue platform with Q-143 (CR 32). The platform is very irregular and is not centered on the temple, but at one end are the remains of a small statue shrine that does mark the center of the temple stairway just to the east. This shrine contained the remains of a stucco statue, and scattered fragments suggest that there may have been others outside it. An interesting feature is the presence of rings set into the floor. The irregular form of the platform is apparently due to several phases of construction. The south extension was originally independent, and there is a possibility that it should be associated with Q-144 rather than with the temple. In CR 32 the two parts of the platform are designated "a" and "b."

Q-147 Altar platform (CR 21; YB 53, p. 275). Group Q-145, 143. A central pit in this very low platform suggests that it was a plinth for a statue or a monument, but no sculptures were observed in the vicinity. It is clearly centered on shrine Q-149 and seems to be directly associated with it.

Q-148 Shrine (CR 21; YB 53, pp. 275, 276). Group Q-151. The association of the shrine and the colonnaded hall is emphasized in this group by the re-use of Puuc stones in the construction of Q-148. Instead of columns the shrine has piers built of eye elements of masks. These eye elements, however, are different from those used in the colonnaded hall, and there are indications that the design was obliterated with plaster. The shrine is of late construction, having been built over an earlier plaza floor. It is not known whether it contains a burial cist, but a trench through the platform failed to reveal one immediately under the terrace floor. The bulbous top of a column altar (fig. 10,u) rested on the latest terrace floor at the head of the stairway, which was in very poor condition.

Q-149 Shrine (CR 21; YB 53, p. 275). Group Q-145, 143. Three unusually well carved human heads with pointed headdresses and back tenons (fig. 8,c) were found in association with this shrine. On one of these heads there were traces of red painted plaster. There was also a rather crudely sculptured human hand, and a leg, though the association of these elements with the heads is questionable. Presumably the heads were used in the exterior decoration of the upper façade, since two were found widely separated at the edge of the fall, while the limbs belong to a statue inside. The shrine had contained an altar, which was pulled down before the building was destroyed, and on the very summit of surface debris was found a small stone vessel carved in the semblance of a turtle carapace (cat. no. 52-209).

Q-150 Small round platform. Group Q-151.

Group Q-151. If the Cenote Ch'en Mul had any ritual significance, it was probably served by this group, consisting of a colonnaded hall Q-151, a shrine Q-148, an oratory Q-153, and small platforms Q-150 and Q-153a, the last built on the very edge of the cenote. The area on the platform Q-152a, back of the colonnaded hall, may have been used for perishable buildings to service the hall.

Q-151 Colonnaded hall (CR 22; YB 53, pp. 276, 282). Group Q-151. This elaborately decorated hall has been partly excavated and resolidified. The standing portions of the piers consist of masks reassembled from carved Puuc-style elements, and, judging from the number of additional elements in the debris, above these masks or on the upper façade were other carved motifs. Except for the interpolation of the two piers in the front colonnade, and the end doorway on the west, this building is typical in plan. The interior shrine is secondary. It contained traces of two stucco figures, a stone turtle, and many fragments of incense burners. As in almost all such buildings investigated, the altar had been looted of its cache in ancient times. The small statue shrine on the stair had also been disturbed and all but destroyed, apparently in ancient times. Against the west end of the substructure, steps that originally led to the higher level west of the cenote were later covered by a ramp paved with large stone slabs.

Caracol Group. The association between Str. Q-87 and the Caracol rests on the very tenuous ground of an analogy with the arrangement in Group Q-212, 218, where a small colonnaded hall stands to the right of the round temple. The unusual plan of Q-87 and the uncertainty about its type make it difficult to relate to other buildings. If it is regarded as a subsidiary colonnaded hall, its association is probably with the Caracol; but if it was an unusually large oratory, it may have served the Castillo and its associated structures. The affiliation of Q-87a is equally ambiguous. The stairway leading up from its terrace to that of the Caracol implies some need for communication between the two buildings, although the general orientation of Q-87a is toward Group Q-99. The Caracol Group, therefore, can hardly be regarded as a functional unit, the only certain associations here being between the temple and two small chambers, Q-152a and Q-152b.

Q-152 Round temple, or Caracol. Caracol Group. Although we refer to this temple as "the Caracol," there is no indication of a spiral staircase, as in the Caracol at Chichen Itza. There are also other differences in plan. The Mayapan temple, for instance, has only one doorway and, so far as we can tell, a single chamber. It was known to Landa, and Stephens and Brasseur de Bourbourg both describe it at a time when the vaulted room was still at least partly intact (Stephens, 1843, vol. 1, pp. 135-37; Brasseur de Bourbourg, 1867, pp. 241-43). They mention paintings within the room and comment on the fact that the round central core is apparently solid, as no entrance into an inner chamber was visible. This is strange in view of the present contour of debris, which does not rise as high at the center as one would expect of a solid mass. The highest point of the vault is now just opposite the door, where it is standing to a height of slightly over a meter above the vault spring. Thirty centimeters below is a small opening, probably a beam hole. Brasseur de Bourbourg shows a breach in the upper façade above the door and mentions seeing old beams within the room. The debris in the middle of the central mass is almost 1.5 m lower than at the front. The final ruin is said to have been caused by a bolt of lightning, and it is conceivable that the central mass sheared off toward the rear, but the possibility remains that there was a sealed inner chamber within the mass. The width of the outer wall is given as 1.50 m and of the chamber as less than a meter. The distortion of these dimensions in the measured plan is probably due to the slope outward of the inner wall of the chamber, which is filled with debris almost to vault-spring height.

For the details of the upper façade we can only rely on the descriptions of the two early observers. They both mention a stone lintel over the doorway and show in their sketches a three-member medial molding and a cornice over a high upper façade. The Brasseur sketch shows likewise the substructure terrace with its vertical wall, and a molding about 80 cm deep. Actually, however, north of the stairway, where a secondary small chamber is built, this molding was not observed. Lined up in the plaza in front of the building, Brasseur de Bourbourg shows three upright monuments. Two of them are probably the idols in figure 9,a,b. Only one of these is designed to be a freestanding figure; that in figure 9,a has a deeply projecting tenon on the back. We do not know where these figures stood originally, but we suspect that they were moved and set up in the location shown after the site was in ruins. On the platform of Q-152 are fragments of several carved and plain monuments, numbered by Patton Stelae 5, 6, 7, and 8 (fig. 11,j,k; 12,g,h). Their original position is unknown.

Q-152a Small shrine with Str. Q-152. Tiny rectangular chamber on platform of the Caracol. Outlines of walls seen on surface of debris about a meter above platform level.

Q-152b Unidentified small chamber, with Str. Q-152. The north wall of this chamber abuts the terrace of the Caracol and projects from it slightly to the north, being built, apparently, flush with the molding rather than with the wall. The floor of this chamber is 93 cm above the level of the ground in front and about 2.90 m below the top of the terrace. The south half is buried in deep debris and was not excavated.

Q-152c Open platform. Possibly location of service buildings. Group Q-151? Before surface excavation, Q-152c appeared only as a vertical wall built against the substructure platform of Q-152. The stub of a transverse wall excavated at the south end could not be followed forward, but the corner of a raised area or platform built upon the terrace was located. At the north end, 90 cm from the south wall of Str. Q-87a, there was a second stub of a transverse wall, but this was buried under a stairway apparently leading up to the Caracol terrace. Thus it appears that a building, probably of the colonnaded type, had once stood here but was later dismantled. It is merely surmise, solely on the basis of its position in relation to Str. Q-151, that this area may have been used for service buildings in connection with the hall, for no actual remains of permanent or temporary structures were observed.

Q-153 Oratory (CR 21; YB 53, pp. 273, 274). Group Q-151. Originally classed as a temple, this building clearly belongs to the type associated with colonnaded halls and shrines that we now designate as an oratory. The walls are badly destroyed, the debris is low, and it is questionable that there had been a beam-and-mortar roof, although its manner of deterioration may account for the absence of the usual stratum of plaster on the floor. This is one of the few buildings found whose altar cache had not been looted. The cache, which consisted of a ball of copal between two redware bowls, was of little value and does not suggest that any extraordinary prestige was attached to the building.

Q-153a Platform on edge of Ch'en Mul (CR 21; YB 53, pp. 274, 275). Group Q-151. There is definite evidence that this platform was built in two sections, that which abuts on Q-153 being the later. A drain at plaza level leads through it to the edge of the cenote. Both sections of the platform apparently supported small structures, for their surface was covered with stones above the level of a fragmentary flooring. In one place the corner of a wall was located, but elsewhere the surface had been too greatly disturbed to yield any features in situ. The mouth of the cenote is directly behind the platform, and traces of retaining walls show on its edges. These walls were built at various times, and there seems to be a step-up in levels from south to north, where the plaza is slightly higher. No special features providing access to the edge of the cenote were noted, and excavation within it by R. E. Smith gave no indication that it was used for sacrificial rites.

Q-154 Platform. Group Q-145, 143. This platform is about a meter high and has vertical walls with a trace remaining of a projecting molding at the top. There was probably a stairway on the east side, resting on a low raised area, though no traces of it were seen. Whether this platform had a superstructure is not known. The reference to this structure in YB 53, p. 276, is probably an error for Str. Q-155.

Q-154a Platform. Group undetermined. A single course of stone outlining a low, rectangular platform.

Q-155 Shrine. Group Q-156, 159. (YB 53, p. 276, structure referred to as Q-154?) Although about the same size as the shrines Q-148 and 149, this building has a more complex plan, and there are traces of a medial wall or piers within the room. Two columns formed the doorway, and the plan may be like that of Str. Q-201, a shrine of the same type. As is usual in a temple assemblage, this shrine faces the serpent-column temple, but its orientation is imperfect, and it is not well centered on the colonnaded hall, probably because of space limitations. The substructure clearly shows two periods of construction: an outer plain vertical terrace, and an inner terrace, trimmed with a low, rectangular molding 10 cm wide. Above this, vertical masonry stands to a height of 53 cm, allowing room for a two-member cornice molding (fig. 4,g), perhaps on the order of that on Str. Q-71. A fragment of a small plain stela 72 cm high, 58 cm wide, and 24 cm thick, tapering lightly toward the top, lies at the foot of the stairway. Near by is a very badly eroded banner holder in the form of a squatting figure (fig. 10,h), probably matching the one found on the platform in front of Q-157a. There is also a badly eroded fragment of a sitting animal (fig. 10,k) and what may be part of a serpent eye (fig. 7,i). These sculptures may come from the small platforms Q-159a, Q-159b or even from the serpent-column temple behind them.

Group Q-156, 159. Temple assemblage, including colonnaded hall Q-156, serpent-column temple Q-159 with platforms Q-159a and b at base, shrine Q-155, oratory Q-158, and subsidiary shrines Q-157 and 157a. Adjacent structures Q-158a and Q-160 may also belong to this group, but it seems more likely that service buildings for the colonnaded hall were located just west of it, and that Q-160 was an independent unit.

Q-156 Colonnaded hall. Group Q-156, 159. This is one of the major halls of the city, and is unusual in that it faces in two directions and contains two long halls as well as two transverse rooms. It is strange that in the front hall of this building, which faces the shrine and the temple with which it is associated, no central ceremonial feature was found. The altar and the shrine, slightly off-center, are in the rear hall which faces on a very broad platform, now presenting a surface of loose rubble. This platform appears to have been trenched in at least two places, and the surface disturbance can be attributed to these excavations. Normally we would expect service buildings to be located here, but the fact that the principal ceremonial feature of the hall overlooks the terrace makes this doubtful. We are not altogether certain that the two long rooms of the hall constitute a single unit, but at the west end there could have been an entrance from the rear hall to the west transverse room, although a doorway was not located.

The rear hall seems to have been secondary, and is built at a slightly lower level than the front. The shrine is also secondary to the medial wall. In the debris above the altar, which had probably been looted, was found a small altar figure of a crouching god (cat. no. 54-43). Excavation in front of the shrine revealed a step raising the eastern half of the terrace in front of the plinth. On the plinth at its juncture with the step was lying a sculptured ring in the form of a jaguar (fig. 8,v).

The north colonnade of Q-156 was decorated with life-size human figures modeled in high-relief stucco on the columns. The second column from the east shows the feet of the figure in place, and a fragment of a well modeled stucco head was found near by (fig. 7,q). Near the rear wall at the west end of the front hall was a loose column drum with a projecting boss on which a head of one of these figures may have been modeled. Unfortunately, we neglected to measure this column drum, and therefore do not know whether it comes from the front or the interior row of columns. There is a considerable difference in the diameter of the drums used, that of the front being 51 cm, and that of the interior row 63 cm. The difference was probably compensated by the thick stucco sculpture on the front row, and we are inclined to think that interior columns were plain. The north stairway to Q-156 seems to have been inset and lacked the usual statue shrine in the center, but on a platform overlapping this stairway there is a tiny construction, Str. 157a, that may correspond to this feature.

Q-157 Subsidiary shrine. Group Q-156, 159. Small rectangular chamber built against terrace in front of Str. Q-158. Sculptures described in connection with Q-157a may be associated with this building.

Q-157a Statue shrine. Group Q-156, 159. Only the side walls of this little construction remain, and whether it faced west toward Q-157 or east toward the plaza is not certain. There is a drop in level toward the east between the two walls, and traces of a very thin wall or parapet were seen to the north. It seems very likely that this little shrine contained a statue, perhaps the female torso found near by (fig. 10,b). This torso had neither head nor limbs, but there is a boss at the neck, on which a head could have been fitted or modeled in stucco. Also on the platform supporting the little shrine is a badly battered banner holder and a piece with a sculptured molding that may be a column altar (fig. 10,p). All these sculptures have apparently been moved, and the banner holder is probably the mate of one found near Str. Q-155.

Q-158 Oratory. Group Q-156, 159. Rudely made alterations are very clear in this building. Originally there was a 10-cm plinth all around the building, but it probably was covered when the floor of the building was raised by a step between the front columns. Column drums as well as blocks were used to build the interior piers. From the surface it appears that there was another, smaller pair of piers, but this is not certain. There may be a bench, but no excavation was made for it, since we did not at the time realize the character of this building. Its location in respect to Q-156 and Q-159, and its general proportions, make it almost certain, however, that it is an oratory like Strs. Q-82, Q-88, and others.

There is a considerable drop in level between the front of this building and the back of shrine Q-157. Terracing may have collapsed here, for no clear levels were discernible. At the higher level, an irregular row of stone could be seen, but whether it represented a terrace edge or was the detritus from some secondary construction was not clear.

Q-158a Platform. Group uncertain. Low, square platform behind Str. Q-158. Conceivably this is a service building for Group Q-156, 159, similar to Str. Q-167a. North of the platform are scattered traces of masonry, perhaps representing other service buildings.

Q-159 Serpent-column temple (CR 32; YB 53, p. 278). Group Q-156, 159. This temple appears to have been built against a natural rise in ground, though once it may have stood more free of it than it does now. Its pyramid has three sloping terraces with apron moldings and sharply rounded corners made of specially cut stones. The horizontal distances between terrace walls were very narrow, and in places the bulging construction has almost aligned these walls. The pyramid is ascended by a broad stairway with narrow sloping balustrades, and the building above is typical of its kind, except for the presence of a plinth, which is somewhat unusual for this type of temple. A sloping lower zone faced with vertically set stones is integral with the wall. The serpent heads of the columns were probably made in stucco and are now entirely destroyed, but just behind them are partly preserved grotesque figures and monolithic stubs of columns encased in stucco (fig. 7,s). Fragments of two serpent tails were found in the debris (fig. 6,d), an unusual spool-like element (CR 32, fig. 6,n), as well as a number of pieces carved with the guilloche-and-pleat motif so common at Mayapan. Near the altar, but displaced, was a stone turtle (cat. no. 54-58).

Q-159a and b. Statue platforms with Str. Q-159. Two very low, rectangular platforms at the foot of the stairway of the serpent-column temple Q-159. Badly ruined.

Q-160 Unidentified. This high mound, probably a natural formation, is connected by a saddle with the terraces of Q-158 and Q-159. Vague traces of terracing can be seen on its east side. On the summit is a broad, flat area, with some loose stones indicating constructions, but no definite alignments of stone except on the edges. The platform may have supported perishable constructions.

Q-161 Attached colonnaded hall (YB 53, p. 278). Castillo Group. This colonnaded hall abuts the lowest two terraces of the Castillo pyramid, and at the juncture the level of its roof can be seen on the second terrace. The hall faces both north and south, and, as is usual, one of the long halls has only a single range of columns, the other, two. We do not know whether this colonnaded hall had an altar or interior shrine, and there were no clear surface indications of a ceremonial feature either here or in the west colonnaded hall, Q-163. For neither is there a shrine centered outside, or a substructure terrace. These halls may differ somewhat in function from the large halls of other ceremonial groups, and may be more intimately related to the temple and its ceremonies than the others. Q-144, though much smaller, is similar in placement and in plan, and these three may define a type of colonnaded hall that was specifically used by temple personnel or by pilgrims to the temple. We are reminded that in Guatemala, according to Román y Zamora, at times of religious rites, men slept in "certain porticos and houses which are near the temple (and) made for the purpose" (Tozzer, 1941, p. 124).

Castillo Group. Strictly speaking, this designation should apply to the entire court north of the Castillo, on which the temple faces. For convenience we have broken up the assemblage, and the Castillo Group is understood to apply only to the structures immediately surrounding the pyramid. These include two large colonnaded halls, Strs. Q-161 and 163; a dance platform or shrine, Q-77; and an indeterminate number of minor constructions, some of which may still be buried under fall from the terraces. Those that are visible are Strs. Q-163a, an addition to Q-163; Q-75, a platform; and Q-76, 162b, 162c, 162d, and 162e.

As we have previously noted, the Castillo and its small dance platform or shrine bear to the group Q-70, 72 a relationship similar to that of serpent-column temples to their respective colonnaded halls. The larger colonnaded hall of the court, Str. Q-81, is neither centered on, nor well oriented toward, the temple. With the exception of Str. Q-87, which might possibly be an oratory for the temple, it seems that the eastern buildings are more closely linked to the Caracol than to the Castillo.

Q-162 Temple of Kukulcan, or Castillo (CR 20; YB 53, pp. 271, 272). The similarity of the main temple of Mayapan to the Castillo of Chichen Itza has long been recognized. Its plan sets it off from all other temples at Mayapan, although some of its features, the serpent columns, for example, the sloping lower zone of the walls, and the lack of a plinth, are retained in other serpent-column temples. There is at least one buried pyramid within the outer construction. A portion of it can be seen at the southeast corner, where the highest outer terrace has fallen away. A carbon sample taken from below plaza floors associated with the pyramid gives an estimated date of about A.D. 1015, which should antedate its construction (see p. 8, Gro-452). The present east stairway was built after the final terraces were plastered and is set a little farther south than the west stairway, thus clearing a passage in front of Q-161. The south stairway is contemporary with the latest terraces, and probably also the north and the east stairways, though the last is less certain. The pyramid probably once stood free of other buildings, but in its final stage two sizable colonnaded halls projected east and west from its base, and a number of small constructions were built against its lower terraces. Heavy fall from the terraces now obscures most of these small buildings. A sacrificial stone and a column altar with a round top are associated with the structure, but both had been displaced.

Q-162a Inner pyramid of Castillo (CR 20).

Q-162b Shrine? Castillo Group. Small chamber set on a low terrace and built against the lowest terrace of the Castillo at its northeast corner.

Q-162c Unidentified. Castillo Group. This seems to be an almost square chamber, standing free of the terraces, but there has not been sufficient excavation here to determine its nature clearly.

Q-162d Statue shrine (CR 20). Castillo Group. This small shrine is built on a terrace that apparently served to level the base of the Castillo terraces. A light wall on the east extends from the edge of this terrace to the first terrace of the Castillo. The west wall of the shrine was not found, and the room may have extended beyond the west end of the trench. On the top step of a narrow, low stairway next to the east wall were the remains of a large stucco statue of a jaguar, built up around a sculptured core of stone. The core had been broken off at the top and several pieces were found in surrounding debris, but the sculpture could not be reconstructed. It is rudely made, but seems to represent also a seated animal much smaller than the final stucco sculpture (fig. 7,t).

Q-162e Unidentified. Castillo Group. Alignment of stones barely showing on the flat surface of debris in the plaza south of the Castillo. Possibly a foundation for a monument.

Q-163 Colonnaded hall (YB 53, pp. 277, 278). Castillo Group. Although this is one of the largest halls in the city, with two galleries and two transverse rooms, no central ceremonial feature was apparent. Between the two galleries is a small doorway, about 1.65 m high and 62 cm wide, with a stone lintel still in place. The bench in the north gallery has an overhanging rectangular molding 13 cm high. There was no evidence of a bench in the south gallery, but the debris is deep and may conceal it.

The building is not raised on a terrace, as is usual, but rests on a low plinth, only 20 cm above the latest court level. This level is extended westward and to the south to form a broad open space around the hall, delimited by a low parapet. No service buildings were observed in the vicinity. Excavations at the northeast corner of the hall revealed the feet of stucco statues at the base of two columns of the outer row (fig. 7,p). The feet are modeled in high relief and point outward in the same position as on a column in Str. Q-156. The same excavations showed that the colonnaded hall was built later than the west stairway of the Castillo, and at one time stood free of it. Later, an addition was built at the southeast corner, which may be integral with Str. Q-163a, and which in any event probably connected the colonnaded hall with the terraces south of the stairway and with the south stair wall. This is indicated by the extension of the south plinth of the hall eastward and by a 40-cm buttress built against the southeast pier.

Just south of this structure was found a large unidentified sculptured form that might be the nose of a very large mask, and near by a fragment of a serpent tail (figs. 7,j; 6,g).

Q-163a Addition to Q-163(?) (YB 53, p. 278). Castillo Group. A deep fall of debris obscures the plan of this building. The buttress to the pier of Q-163, which seems to join the two buildings, and the fact that, in the one spot where the plinth was uncovered, it led through a doorway, both suggest that Q-163a had an open façade and formed a wing of the colonnaded hall. At the juncture of the stairway wall and the terraces of the Castillo, the corner of the building is standing to almost its full height, and two holes in the masonry, 80 cm on center and 70 cm from the corner, may be holes for beams that once supported the roof. The bottoms of these holes are 2.76 m above the plinth of Str. Q-163a at its juncture with the colonnaded hall. At a height of 3.85 m above the same point, against the third terrace of the Castillo and about 90 cm below its top, is the plaster coating of a thick cap of roofing material resting on the second terrace. The distance of more than a meter between these two levels seems excessive, but may be compensated by the slope of the cap as it abuts the terrace or by a somewhat higher placement of the beams, which is possible in view of the irregular form of the holes caused by the falling out of small stones. From these data we have estimated the plinth-to-cornice height of the structure to have been in the neighborhood of 3.50 m.

Group Q-164. A basic ceremonial group including the colonnaded hall Q-164, the shrine Q-201, and the oratory Q-202. Immediately west of the colonnaded hall is a small group of the type considered to be a private dwelling and including a typical dwelling-house structure Q-168 and a private oratory Q-165. This last group appears to be complete, with its own small service buildings, Q-166, 167, and 167a, and recalls Str. Q-62 adjacent to another colonnaded hall. Even though it seems probable that it served as a residence to some dignitary of the hall, it is more likely that services for the hall were supplied from humbler structures, built either on the slope behind the hall or on the platform Q-203.

Q-164 Colonnaded hall. Group Q-164. The altar and interior shrine of this structure are even more off-center than those of Q-156, and no reason is evident. The main stairway and the associated structures are clearly placed in relation to the hall and not to its altar. There is no transverse room, but there appears to have been a doorway in the east wall, leading to the terrace in front of Q-156. The terrace in front of Q-164 is unusually wide, and there is a suggestion at the west end that its front edge is secondary. It is ascended by a symmetrical stairway. No central shrine was noted here, but one may easily have been buried by the fall.

Q-165 Private oratory to Str. Q-168 (CR 33; YB 54, pp. 275, 276). Group Q-164? Although immediately adjacent to Str. Q-164, this small building faces in the opposite direction and forms part of a dwelling-house group. It is typical of small oratories in house groups except for an additional room to the west, which faces south toward some rather vaguely defined constructions which were probably service buildings of some sort. The southeast corner of this room as shown in CR 33 is clearly of earlier construction. Observations on the surface showed a corner slightly set in from this wall, which was probably the corner of the later building, but which apparently was not fixed firmly and was subsequently removed with surface debris. The west room had been used as a burial chamber, but in debris above the floor were found a metate, several manos, and household pottery, so that it clearly seems to have served in the final period as a service adjunct to the oratory, with which it communicates by a small door.

Q-166, Q-167, Q-167a. Service buildings with house Q-168 (CR 33; YB 54, p. 277). Even after excavation, no clear conception of the plan of these buildings emerged. They were built largely with perishable materials, and since the floors were in poor condition no postholes were evident. The remains consist of masonry benches and platforms, very badly destroyed, and occasional traces of low walls that may have served as foundations for wooden construction. The midden material in and around these structures suggests their use as kitchens.

Q-168 Dwelling house (CR 33; YB 54, pp. 276, 277). Group Q-164? The irregularity of the plan of this building is undoubtedly in part due to the fact that the wall foundations are very low, often displaced, and extremely difficult to follow. The major part of the construction was probably of wood and included post supports on the façade and transverse partitions of the rear room. The general layout, which can be inferred mainly from the arrangement of the benches, seems to be that of an ordinary house with an additional room to the south. The group does not differ greatly from other house groups except for the prominent place given the oratory, Str. Q-165, and its large size in relation to the other structures. This would seem natural if the house were occupied by a priest or someone directly involved in the ceremonies of the surrounding structures, as its proximity to the colonnaded hall Q-164 suggests.

Q-201 Shrine. Group Q-164. This is one of the more elaborate shrines centered on a colonnaded hall and can almost be regarded as a minor temple. It contains two rooms, with an altar in the back room. The entrance is a triple doorway with two small columns made of drums only about 40 cm in diameter. One of the lower drums of the exposed column shows a projecting tenon, on which originally there probably was a stuccoed sculpture. At the base of the rear wall there seems to be a narrow plinth, but this is 49 cm below the floor of the room and may be the edge of an earlier buried platform. The substructure rises abruptly with very slightly sloping walls and seems to drop down in front, but the terrace level is nowhere exposed.

Q-202 Oratory. Group Q-164. The building stands slightly back of and to the left of the shrine Q-201, on a much lower substructure, only a little more than a meter high. There is no indication that the interior shrine is secondary. Other interior arrangements could not be seen, but the deep debris suggests the presence of benches. A most unusual feature of this building is the suggestion of a sloping lower zone at the northwest corner. This slope does not continue to the rear corner, where the wall is vertical, and it is possibly a secondary feature, or even a fortuitous sloping of lower stones of the wall, though it was seen both on the front and on the side. The ground is higher in front of Q-202 than in back, and on the east a retaining wall abuts its terrace. On the west, the mound Q-203 is joined to its substructure.

Q-203 Unidentified. This is a low, nondescript mound next to Str. Q-202. It may be little more than terracing raising the level of the paved area to the north, but loose stones on top indicate some sort of construction, and a rough alignment of large stones may be part of a wall.

Q-203a Unidentified construction. In the open space back of Str. Q-202, large upright stones are standing, which at one point form two parallel lines. Some of these stones are fairly well cut, and the construction seems to be something more than a lane formed by boundary walls.

Q-203b Unidentified. Low, rectangular mound, showing no standing walls. The association of the mound is uncertain. It probably belongs to one of the near-by house groups. To the south of this mound is a boundary wall, which is probably of aboriginal construction.

Q-204 L-shaped bench. In the area just south of the Main Group are a number of structures whose only visible remains are an L-shaped bench, sometimes with a wall along the longer leg of the L. This seems to be a specific type of structure belonging to domiciliary groups. Q-204 is apparently built in relation to Q-203a, and both may be part of the house group Q-208, 205.

Q-205 Dwelling house. Although CR 19, which treats of Str. Q-208, does not mention this structure as part of the group, the two buildings are obviously related and probably pertain to the same household. Q-205, though placed on a rather unusually high substructure, is a typical dwelling of the more elaborate kind. It has a rear room or range of rooms with a bench altar in the center, a medial wall with three doorways, and a front room with a four-column open façade and benches against the three walls. Its masonry is somewhat superior to that of most ceremonial buildings, and the depth of debris suggests beam-and-mortar roofing.

Q-205a Unidentified. At a low level, behind the substructure of Q-205 is a small building, apparently standing free, on a platform attached to the terrace of the larger building. All that now shows clearly is part of the rear wall and the suggestion of benches. Since service buildings seldom had masonry walls, it may be that this was a small oratory serving the house group.

Q-206 L-shaped bench. Here we are clearly outside the ceremonial area and among house groups. This L-shaped bench probably does not belong with the group of houses Q-208, since there seems to be a boundary wall between them. There is also a wall between this structure and Q-198, but it may be of post-Columbian construction.

Q-208 Dwelling house (CR 19). Landa's remark that the houses of the nobility and the wealthy were near the ceremonial center is confirmed by the character of the residences surrounding the Main Group, of which this building is a good example. Particularly striking is the superior masonry of some of these structures, well represented in this building.

Q-208a Unidentified (CR 19). Platform projecting northward from the substructure of Q-208. Apparently part of an earlier construction.

Q-209 Dwelling house? (CR 19). A largely perishable house built after Q-208 and probably constituting an addition to its living quarters.

Q-210 Unidentified. Low, rectangular mound, with no visible features. Possibly a service structure belonging with the house group of Q-208.

Q-211 L-shaped bench. Group affiliation uncertain. May be dependency of Q-208.

Group Q-212, 218, 214. This temple assemblage forms a semi-independent group south of the main assemblage. It is perhaps worth noting that all three serpent-column temple assemblages are in the southeast quadrant as measured from the Castillo. The other two such groups, Q-156, 159, and Q-145, 143, are symmetrically arranged and almost exactly north of this one. A long passage between the terraces of Q-145 and Q-156 gives access to the northern groups.

The parallel between this arrangement and the arrangement of Strs. Q-54, 70, and 72 in the northwest quadrant is striking and may have some significance. In addition to the colonnaded hall Q-212 and its service structure Q-212a, the temple Q-218, its shrine Q-216, and its oratory Q-217, the group includes a round temple Q-214 with a semiattached colonnaded hall, Q-213. The small platform to the north, Q-215, is probably also part of this assemblage, and to the southeast is a large, low platform, Q-220, with scattered column drums on it, that may constitute a wing or addition to the colonnaded hall Q-212 or may be a structure in the process of being dismantled.

Q-212 Colonnaded hall. One of the largest colonnaded halls in the city, this building also has the heaviest columns. Those of the façade measure 62 cm in diameter, and those of the rear 73 cm, with an additional coat of plaster more than 3 cm thick, which would have brought them up to a final 80 cm. The easternmost column of the front row uses a tall monolithic shaft, and we suspect that these columns were sculptured in stucco. As is usual, in the middle of the room against the back wall is a small secondary shrine incorporating two of the columns. Inside is an altar 78 cm high, raised 11 cm above the floor of the room by a low step in front. The benches on either side are 54 cm high, and project into the shrine. The building has no end rooms, but there is a doorway in the east wall, facing Q-220, although there is no break in the bench at this point. Near this doorway was found a large channeled stone that probably served as a gutter spout, and a similar stone was found at the northeast corner (fig. 4,m). The rounded northeast corner of the terrace on which the building stands is formed of large re-used column drums, 73 cm in diameter. A masonry block or balustrade and a stairway show clearly a short distance to the west. Both the substructure and the stairway contain horizontally laid stones that measure up to 60 cm and are considerably larger than is usual at Mayapan. About 9 m from the corner, the stairway ends, or is blocked by secondary construction, much of which has collapsed. In the center, only a general slope of debris can be seen, but near each end are rows of column drums set on edge, which evidently formed the front wall of an extension forward of the terrace. The terrace seems to drop suddenly near the west end, where it joins with the level of Q-213, but there are no walls evident to show how this juncture is made.

Q-212a Service building, with Q-212. As usual, back of the main colonnaded hall are platforms with traces of construction, probably representing the services. A corner of a bench and a small portion of wall were located. Some distance to the west is a solid wall built partly of upright stones that look like aboriginal construction, and partly in the manner of post-Columbian walls. Two large upright stones placed transversely form a gate in this wall. The wall extends to join the south wall of the great corral that surrounds the ruins. The late part of the wall ends at this corral, but some original stones may continue beyond it. This may have been a boundary wall surrounding the house group Q-208, 205. On the other hand, the aboriginal construction cannot be followed continuously, and its pattern is far from clear.

Q-213 Atypical colonnaded hall (CR 16, pp. 18, 19). Attached to Str. Q-214. This building stands next to the round building on a substructure only one course of stones high. Originally it was freestanding, but the passage between it and the terrace of Str. Q-214 was later blocked. The analogy between this structure and Q-87, next to the Caracol, is very close. Both buildings have four columns on the façade and four interior supports. There is even a suggestion of masonry around one of the central columns of Str. Q-213, as if a pier, like those of Q-87, had been built around it. If so, the two buildings are almost identical in plan. Unfortunately we know the interior arrangements of neither. The plinth of Q-213 extends more than 2 m beyond the south wall, but there is no indication of a doorway in this wall or of a transverse room. Possibly this portion of the plinth is earlier and was later covered by the terrace of Str. Q-212.

Q-214 Round temple (CR 16). Group Q-212, 218, 214. This structure combines with a typical temple assemblage to form a larger group, and is intimately associated with Str. Q-213, which corresponds to Q-87 in the Caracol Group. In plan, it resembles the Casa Redonda at Chichen Itza (Pollock, 1936), although it was vaulted and not thatched. It rests on an unusually high plinth set on a substructure about 2 m high, and has a sloping lower zone, like the Casa Redonda. On the stairway in front is a shrine containing a feminine idol (fig. 10,f). This is of particular interest, for high round buildings are associated in Mexico with the cult of Quetzalcoatl and are generally believed to be dedicated to the wind god. The statue suggests a different association, and unless the two large zoomorphic banner holders (fig. 10,g), standing at some distance in the plaza northeast of the building, can be identified as versions of the Mexican Ehecatl (which is very doubtful), we must conclude that the wind-god association does not hold for this structure. Other sculptures scattered in this location include three tenoned skulls (fig. 8,h), more examples of which were found in the debris of the building, a tenoned human head (fig. 8,i), and a number of sculptured Puuc stones.

Q-215 Platform. Group Q-212, 218, 214. Small square platform little more than 50 cm high, with no evidences of steps or of a superstructure. At the corners are vertical stones cut on a bevel (fig. 4,j).

Q-216 Shrine. Group Q-212, 218, 214. The shrine faces the serpent-column temple, as is usual in a temple assemblage, but is rather poorly aligned with it. It is an unusually small shrine, standing on a substructure a little more than 1 m high. Like Q-215, the substructure has large beveled cornerstones, and may have had an overhanging molding about 40 cm deep. Loose stones on the summit, among them some of Puuc workmanship, and vague traces of walls indicate a superstructure of some sort, but the plan of the building is uncertain.

Q-217 Oratory (CR 32, p. 404). Group Q-212, 218, 214. This building is identified more by its general size and location than by its plan, of which nothing can be seen but the outlines of two piers or possibly jambs of a shrine. The debris at the back of the platform, however, is higher than at the front and includes small column drums, 43 cm in diameter. We believe that a building once stood here, though it may have been partly of perishable construction. The northeast corner of the substructure is rounded and is built up of small blocks, with traces of plaster still preserved. Other corners were not visible, but presumably were similar, except where the terrace walls abut the corner of the serpent-column temple.

Q-218 Serpent-column temple (CR 32). Group Q-212, 218, 214. The three lightly sloping terraces of this pyramid temple form a shell covering an older construction. Probably for this reason the temple building is largely destroyed. It appears to have been smaller and more lightly built than its predecessor. Its columns were twice plastered before the present serpent heads were attached, but the temple has a sloping lower zone and was not essentially altered, as was Temple Q-58. The serpent heads and forefeet are carved in one piece (fig. 6,j), and are placed a short distance in front of the columns and connected with them by masonry and stucco. One complete serpent tail (fig. 6,f) and fragments of another (fig. 6,e) were found in the debris. Another set of serpent heads (fig. 6,k), carved to fit columns, is below, at the foot of the balustrades. Like all such temples, Q-218 has a statue platform in front and a facing shrine. Centered at the foot of the stairway next to the platform is a sacrificial altar.

Q-218a,b Statue platforms with Q-218. The two contiguous platforms are one course of stone high; the small north wing is the earlier. To the west, in front of the platform is the butt of a statue made of two grooved stones, and fragments of stalactites in the debris indicate the presence of stucco idols.

Q-220 Colonnaded hall? Group Q-212, 218, 214. This broad, low platform is covered by a thin layer of debris and many scattered column drums. Along the back runs a modern milpa wall that continues over Str. Q-212. Some of the stone may have been removed in the building of this wall, but even this seems insufficient to account for the low and indefinite remains of Q-220. Either it was in part a perishable construction or it was already in the process of dismantlement when the site was abandoned. This possibility is suggested by the re-use of column drums in the secondary addition to the front terrace of Q-212. The plan as drawn is little more than a guess, but a few column drums that may be in place, traces of benches, and a platform projecting in back almost surely identify the building as a colonnaded hall. It is not oriented to any other ceremonial structures, however, and unless it was a jerry-built addition to Q-212 we can only suggest that it may have been an earlier abandoned structure.

Q-222 L-shaped bench. This mound, with Strs. Q-224, 226a, and 226b, forms a small house group on the periphery of the ceremonial precinct. Northwest of this structure can be seen a trace of the boundary wall that probably once surrounded the group.

Q-223, 223a Unidentified. Traces of walls on the summit of a rise probably for the most part natural, though showing some masonry on the slope.

Q-224 Small round building. Bullard (CR 3, p. 39) in his survey of boundary walls mentions small circles occasionally found in house groups. Many such circles have no entrance, and so the entrance may be merely a gap caused by fallen stones. This circle is apparently better built than most, having a wall formed by a double row of upright stones. The function of such structures is not known.

Q-226a House or service building. Low remains of walls here suggest two rooms, one behind the other. The building rests on a low platform, contiguous to another extending eastward. In the narrow channel that may have served as a drain between the two platforms were found large fragments of a Mayapan Redware jar.

Q-226b Dwelling house. This is a relatively small but very well built house, with four columns on the façade made of exceptionally regular, high, and well cut drums. The details of the plan are obscured by a milpa wall, and the small column shown against the medial wall is more probably an altar resting on a bench. The house is the principal building of a group that also includes Q-222, 224, 226a, and other small structures.

East Extension of the Main Group (map in rear cover pocket)

About 60 m east of Str. Q-142 is a vaulted gate leading to a small group of ceremonial structures. This gate, Str. Q-127 (CR 8), stands free, and no traces of masonry walls abutting it could be found. Excavation has not clarified its function. Shook (CR 27, p. 267) speaks of it as the "most elaborate and formal entrance to the ceremonial center of Mayapan," and describes the group as lying on "what apparently had been the principal eastern avenue of approach to the heart of the city." This view presupposes the construction to be earlier than two house groups that effectively block such an avenue to the east, and further takes no account of the fact that the anteroom, or wide part of the structure, faces the east group. Similar chambers in the major gates of the city wall invariably face toward the city, and a comparison would suggest that if Str. Q-127 served as a gate it was to the east and not to the Main Group. Strömsvik (CR 8, p. 137) remarks more cautiously that "it may have been intended as a portal for a city division that has been obliterated or never came into existence."

The rest of the group is comprised of a colonnaded hall, Str. Q-129, for which we have no detailed plan, a round temple, Q-126 (CR 27), and a small building, probably a shrine, Str. Q-127a

(CR 8). No building that could have served as an oratory is in the vicinity, and, although two house groups closely adjoin the court, their orientation does not suggest a necessary connection with the ceremonial buildings.

The identification of Str. Q-127a as a shrine rather than as an oratory or as a temple rests partly on its small size and on the fact that it contains no benches or altar. Parts of a stone statue found on the terrace further suggest a shrine function. It is possible that this shrine was built to replace a small rectangular building of approximately the same dimensions, which is buried in the substructure of the round temple. The buildings of this group are casually arranged, none of the smaller structures being centered on the colonnaded hall.

An unusual feature of this group is the concentration of monuments at the base of the round structure. Shook's plan indicates at least seven plain stelae and three that were carved. One of these (fig. 11,l) is carved in such high relief that it has almost the character of the statues we refer to as idols. However, its plain slablike back and its location suggest that it was an outdoor monument. The other two carved stelae are badly eroded (fig. 12,d), but show enough of the carving to identify the usual pattern of Mayapan stelae, which consists of superimposed panels separated by horizontal bands. Two plain stelae retain traces of smooth plaster and have centrally located pits (CR 27, fig. 4,i). The original location of these monuments is unknown, but the fact that a "sacrificial stone" of the pyramidal type was found off the rear corner of the structure allows of the possibility that even the plain, heavier monuments had been moved. In front of the round building and centered upon it is a small square platform referred to as an "altar" in CR 27. Whether this "altar" could have served as a monument foundation is not clear, but the fact that one side of it is destroyed suggests such a possibility. Shook, however, believes that all the monuments were lined up on the substructure terrace.

Miscellaneous Ceremonial Structures near the Main Group

Nearly all the large residential groups that cluster around the ceremonial center contain shrines, oratories, and possibly other types of buildings whose function was principally religious. These are considered by A. L. Smith in his report on the domestic constructions at Mayapan (part 3). Several scattered structures in the vicinity of the Main Group, however, could not clearly be related to any assemblage of houses. These include various kinds of mounds that have not been investigated. We can do little more than call attention to their existence, and to point out that our description of ceremonial constructions in this area may not be entirely complete. The structures in question include:

Q-53. A low rectangular mound in the broad open space behind Str. Q-58. Traces of boundary walls are noted immediately west and southwest of this mound. It was very probably the foundation of a perishable construction that may have been a dwelling or a minor civic building.

Q-120. Square or rectangular platform 3 to 4 m high, supporting traces of a superstructure. It stands in an isolated position but entirely surrounded by important residential groups to the east of the Main Group. Undoubtedly a shrine or small temple, it may have served as a private chapel for a related group of families of the nobility.

Q-199. Pyramidal mound, with traces of superstructure. Probably a shrine or temple similar to Q-120. It stands just southwest of the Main Group in an open space. South and west of it are residential groups.

Q-225. Small square shrine (fig. 2,b) isolated in an open area surrounded by large residences southeast of the Main Group. A large pestle-shaped stone, possibly a ''column'' altar, was found in the vicinity.

Q-233. Badly ruined structure, with a columnar entrance. Possibly a private oratory, but not obviously connected with a domestic group. Nondescript platforms in the vicinity.

Q-240; 241. High U-shaped platform or terraced natural rise, with some indication of walls on summit. Overlooks an open space with alignment of stones indicating a small centered construction, Q-241.

OUTLYING CEREMONIAL GROUPS

The Group at Itzmal Ch'en (fig. 1; YB 54, pp. 280-83)

This group is built on a fairly level area of bedrock, and nowhere in the plaza was any considerable depth of construction or underlying soil encountered, though trenches showed a varying number of superimposed floors in different locations. The lots of ceramic sherds from under these floors were small and did not indicate a great antiquity for the group.

At first glance the arrangement of buildings at Itzmal Ch'en appears quite different from the arrangements encountered in the Main Group, but on closer inspection it can be seen as a combination of a basic ceremonial group and a temple assemblage, sharing a single shrine and complicated by the fact that in the temple assemblage the functions of a temple and of an oratory are incorporated in a single structure. This structure, H-17, dominates the group. It is set on a high foundation with walls that have a deep apron molding, very much like Str. Q-95 in the Main Group. These walls encase an earlier platform and were in turn covered with masonry, at least to the level of the apron, thus forming a terraced construction in the final period. On the south there is a wide balustraded stairway, and below, an irregular statue platform of the sort that is specifically associated with serpent-column temples (CR 28). The feet of two stucco statues were found in place, and between them the remains of two ring sculptures. A sacrificial altar and two drum altars stand in front of the statues. Between the platform and the stairway leading to the temple were three other ring sculptures and two round-topped column altars.

This is so typical that one would expect Str. H-17 to be a serpent-column temple. Instead, it has the plan of an oratory, with interior columns instead of piers, as is common in domestic oratories (cf. Str. Q-165 in Main Group). The building contains a bench interrupted by a central altar decorated with stucco atlantean supports (CR 28). The conditions as described by Thompson suggest that this altar was destroyed by the inhabitants with the purpose of looting its cache, as we have often found to have happened at Mayapan. At least two renovations are indicated by fragmentary floors. Clearing to the west of the main building disclosed a plinth and the base of a column. Column drums were also found at the foot of the rear terrace along its entire length. Some sort of open gallery at the rear of the building seems indicated by these remains, although we have no precedent in other buildings for its reconstruction. The peculiarities of this structure bear on the question whether the group at Itzmal Ch'en is entirely independent of the Main Group. If this structure is not, strictly speaking, a temple, then the temple precinct of Mayapan can be said to lie entirely within the Main Group, and this minor center acquires the nature of a dependent group, in which perhaps only the preparatory ceremonies of the larger public celebrations could be performed. Unfortunately we do not know what sort of temples were being built in neighboring towns at that time.

Facing Str. H-17 across the court and probably associated with it is the largest of the three colonnaded halls, Str. H-15. The plan of this hall offers no problems, since it is typical of its kind. The only peculiarity is the absence of a shrine either around the central altar or on the stairway in front. Lying on the platform near the center is a pyramidal monument with the remains of a sculptured animal figure (fig. 10,x), which recalls a similar monument on the platform of the colonnaded hall Q-97. A very crudely sculptured tenoned head with exaggerated puffy cheeks was found in the debris of the building (fig. 8,d).

Between the colonnaded hall and Str. H-17 is a round shrine on a rectangular platform with four stairways. Just off the southwest corner of the shrine are the remains of a tiny construction housing stone and stucco sculptures (CR 34). It is almost opposite the center of the stairway to the colonnaded hall and may have served it instead of a stairway shrine. The association of such a construction with a colonnaded hall, however, is unusual. In CR 34, the round structure is designated as a temple, but, considering its size and its relation to the other structures of the group, the term "shrine" seems more appropriate. Unlike the other round structures at Mayapan, it has four doorways. In the center is a column, encased in masonry, that has four niches, and in the west niche stands an altar with a bulbous top, of the sort that we consider analogous to the column altars of the Usumacinta region and of the Puuc. Near the south niche was a badly eroded sculpture, possibly of a monkey, with two back tenons. The structure is clearly, though not altogether accurately, centered on Strs. H-17 and H-14, but is not well centered on either of the colonnaded halls. Stairways, however, face in all directions, and although the alignment is imperfect it seems to have been the intent to arrange two groups on its perpendicular axis and to link them thus into a single assemblage.

Structure H-14 is a building of the oratory type facing across the plaza toward the second hall, Str. H-16. Like H-17, it has interior columns instead of the more usual piers, but otherwise its plan, with its broad front platform, is typical. The colonnaded hall, H-16, on the east side of the court is in very poor condition. Many carved stepped elements that decorated its bench were found on the surface of the mound. Its rear wall was never located, and in some areas only the remains of an earlier structure were found in place. Either this building was in the process of reconstruction when the city was abandoned or its remains were very thoroughly disturbed at a later date. The restored plan is consequently incomplete and in large measure hypothetical. However, the two rows of columns, the bench outlines, and the remains of at least one transverse room definitely indicate the plan of a typical colonnaded hall. No evidences of an interior or of a stairway shrine were found, but off the southwest corner of the platform on which the hall stands is a small stairway, and in front of it a miniature shrine, Str. H-16a, its rear wall formed of a single upright stone. A similar placing of a platform or shrine to the left of the hall occurs several times in the Main Group. Near the shrine is lying a "column altar" with a round top and a badly eroded molding.

In addition to the four principal buildings of the court and the central shrine, there are two other ceremonial constructions in the group. One is a square platform, H-13, about 2 m high. It may have carried a superstructure, though there are no longer any remains on the summit. It faces diagonally into the court from the northwest corner, and can probably be classed as a subsidiary shrine. Like many small shrines it contains a mortuary cist which was filled with the bones of a number of human skeletons.

Somewhat isolated from the closely knit court group is a third colonnaded hall, H-12. This hall is smaller than the two on the court, and the south end of its plan is somewhat irregular, showing definite signs of alterations. In one place a pier is interpolated among the columns of the interior row. The hall stands on a plinth, but there is no front platform or elevated substructure, and in this respect it resembles some of the subsidiary halls attached to temples in the Main Group. Off the northeast corner are traces of a very low rectangular platform. Behind this hall is a leveled area on which there are remains of benches and walls suggestive of a service building (H-11). These are the only remains of such character that we were able to identify for the group, although Chowning suggests that the south end of Str. H-16 was independently roofed and served as a kitchen for the hall. Moreover, there may have been perishable constructions in empty areas behind the other colonnaded halls that have left no surface remains.

No constructions could be seen immediately around the cenote or inside it, and, although the site today is used for rain-bringing rites by the inhabitants of Telchaquillo (YB 51, p. 250), no definite evidence, such as was found at Cenote X'Coton, pointed to its ceremonial use in ancient times.

Although the group at Itzmal Ch'en exhibits peculiarities not found in the Main Group, the association of building types is fundamentally the same. The absence of a typical serpent-column temple is notable, however, and the character of the dominant temple, H-17, poses some question in regard to the function of atypical temples such as Q-95 and Q-141 in the Main Group. That the round form is here applied to a building that serves as a shrine brings up another point as to the proper basis for a classification of buildings. It shows that form alone may not suffice, and that a study of assemblage types is necessary if we wish our distinctions to have functional significance.

Structures J-109 to J-111

About halfway between the Main Group and Itzmal Ch'en is a group of structures of the type we call a "basic ceremonial group." Its isolation tends to confirm the idea that such an assemblage is standard for an independent unit that includes a colonnaded hall, and suggests that halls having no associated shrine or oratory are probably subsidiary to larger groups or to temples.

The buildings are in very poor condition, and no standing outer walls were found. The plans as shown (fig. 2,a) are largely reconstructions based on the Jones map and on additional field measurements made by Ruppert and A. L. Smith. The masonry of the benches and the scattered column drums are sufficiently indicative of the general nature of the plans to identify the buildings with near certainty.

The colonnaded hall, though simpler than halls of the Main Group, shows the characteristic remains of an inner shrine, benches, and an open façade. All the columns are displaced, and a modern wall along the façade has made observation of original debris contours extremely difficult. The large number of loose drums suggests a building with two rows of columns. The field sketch shows no signs of an end room, but the map of the site indicates an extension of the terrace to the south, a feature that may be expected if this is a colonnaded hall. Two sculptured elements were found in the debris: one a dentate form of Puuc workmanship; another a column drum with a rude representation of a turtle, its head depicted on a projecting boss.

The small shrine platform in the center faces the colonnaded hall. It is about a meter and a half high, and seems to have some sort of superstructure, though perhaps only a secondary platform for a perishable construction.

Beyond the shrine is a building that we have little hesitation in identifying as an oratory. It is set back on its substructure, and two L-shaped benches show at the rear of the building. The front probably had two columns 45 cm in diameter, now out of place, and the depth of the room strongly suggests two others on the interior. Off the south edge of the platform is a cylindrical stone 35 cm in diameter and 85 cm long.

Although no service buildings were observed in the vicinity there is sufficient open space around the group to have accommodated perishable constructions. Without excavation, the apparent absence of such buildings is probably not significant. The surrounding areas are occupied by house groups, and there is nothing to indicate why a ceremonial group is located here. However, on the map of Square I in CR 13 can be seen a lane of boundary walls starting near Itzman Ch'en and heading in the general direction of the group. We have only scattered data on boundary walls in Square J, and do not know whether there are lanes providing access to other parts of the city.

It might be expected that, in a city the size of Mayapan, neighborhoods would have individual centers of community life, but this is the only group of its kind outside the two large ceremonial assemblages. If there is any regular distribution of ritual or market centers, the buildings connected with them are too inconspicuous to be segregated from miscellaneous small constructions scattered among house groups. Only two other small ceremonial assemblages are known, both located near the periphery of the city, and they do not conform to the standard arrangement.

The Group at Cenote X-Coton (CR 11)

This small ceremonial group clearly does not follow the conventional pattern observed elsewhere. Its temple, T-72, however, is in some respects very like Str. Q-95 in the Main Group. Both have a burial shaft, both are entered from the terrace level without an intervening plinth, and, since no balustrades were observed on T-72, both may have stairways lacking them. The terrace profiles, on the other hand, are different, and there is reason to think that T-72 was built partly of wood.

Structure T-70 is a platform supporting two buildings referred to as "temples" in CR 11. In the nomenclature of this report, they are probably better designated as shrines, though the character of the larger is by no means clear. In size and arrangement, these shrines recall Strs. Q-79 and 79a in the Main Group. A similar juxtaposition of two unequal small structures occurs at Chichen Itza in the Chultun group (Ruppert, 1952, p. 152) and Str. 6B2 (ibid., p. 138). It occurs also on the east coast of Yucatan (CR 24, fig. 23). T-70 had an interesting sequence of development. The proportions of the original platform suggest that the structure upon it was similar to the larger of the two shrines, and the character of its "altar" suggests that it housed a statue. Small platforms and a monument were aligned on its stairway. In subsequent renovations there was evidently a separation of the functions of the building. A small shrine was centered on the platforms, and a larger building was placed beside it. The shrine had a rectangular "altar" which at least at one period served as the base of a stucco statue. The other building has a very low bench. Later a small shrine was built on the steps leading to the larger building, probably for the accommodation of a second statue. Although the full significance of this development is not now apparent, there is little doubt that it illustrates a general trend toward a proliferation of small shrines that is suggested in the Main Group by the secondary character of many of the interior shrines and by the fact that a number of independent shrines were found to postdate plaza floors.

The X-Coton temple and the shrines are located near one of the principal gates of the city wall, and the course of the wall at this point seems to be deliberately deflected to contain the buildings, or at the least to contain the area around the cenote near which they stand. The buildings themselves are of Mayapan date, but a considerable amount of pre-Mayapan pottery was found in the vicinity, and there is some evidence that the cenote itself may have been used for burial in pre-Mayapan times. At a much later date, a small structure was built inside the cenote (CR 5), and sherds of late incense burners testify to its ceremonial use. There is no such evidence of ritual activity in other cenotes at Mayapan. It therefore seems reasonable to think that an ancient tradition associated specifically with X-Coton is responsible for the ceremonial buildings in this locality.

Structure E-11 and Associated Mounds (fig. 2,c)

This structure has the appearance of a shrine or a small temple. Its substructure is about 4 m high, and is terraced with vertical walls of unusually large, roughly faced stones. Stairways are visible on the east, west, and south sides, but not on the north, where there is a rise of ground. The stairs have sloping balustrades formed of large slabs.

In front of the south stairway is a low platform about 1.60 by 1.70 m with its facing stones rising above the contained fill. Behind E-11 is a pile of large stones, some of which may be in place and are set vertically to form a corner. These may belong with a boundary wall that in part surrounds the shrine and two other mounds. On the surface, the other mounds do not differ essentially from modest house-group constructions, but the presence of a conspicuous shrine in their midst is so unusual that the group cannot be regarded as domiciliary. To the north can be seen the remains of what appears to be a causeway, some 2 m wide, or perhaps, as has been suggested by Shook, the base of an old city wall that had been torn down to extend the city precinct. Whichever it is, the presence of this construction indicates some change in plan and suggests that the shrine may be a survival from some earlier group.

OBSERVATIONS ON THE ARCHITECTURE AND SCULPTURE OF MAYAPAN

When in 1951 we began excavations in the Main Group of Mayapan, the quantity of well cut stone and the occasional fragments of sculptured stelae that we found scattered in the ruins led us to conclude that there had been an earlier settlement at the site than the historically known capital, Mayapan. Intensive digging disclosed no constructions, however, from which the finely cut stone could have been salvaged. The earliest structural units discovered belong to a period subsequent to the abandonment of Chichen Itza, and we are forced to conclude that the fine stone was brought in from outlying settlements, probably already in ruin when building of the capital was started.

Our knowledge of the first buildings of Mayapan remains meager. Most of them were razed and covered with later masonry, and if any were left standing they are not easy to identify, for the foundations, even of late buildings, usually rest upon bedrock and have no stratified deposits under them. There is no evidence of radical changes after the foundation of the city, either in masonry technique or in architectural style. From the very beginning, a rude masonry was used, utilizing some well cut stone but mostly roughly cut slabs and blocks, heavily coated with plaster and modeled stucco. Elements of at least three distinct traditions can be discerned in the design of the buildings: the tradition of the Toltec of Chichen Itza, that of the Maya of western Yucatan, and that of the inhabitants of the east coast of the peninsula, whose ethnic composition at that time is not fully understood. The final synthesis of these three styles is peculiar to Mayapan, and the city as a whole resembles no other known site of the Maya area.

What appear to be the earliest remains were found in front of the north stairway of the principal temple, Q-162. Under this temple there is an earlier structure of which we know little beyond the fact that it stood on a stepped pyramid, built in the same manner as the later substructure. It is probably safe to assume that the temple plan was also the same as that of the final building, which very nearly duplicates the plan of the Castillo of Chichen Itza. In front of the early temple stood a small platform, Q-77, closely corresponding in position to the Temple of the Cones in front of the Chichen Itza Castillo. The original Q-77 had four stairways, but was not zoned and paneled in the manner of the Toltec "dance platforms," or momoztli. Between the two buildings stood a roughly built platform Q-77a, which was later razed and covered by a floor.

We do not know precisely what constructions on the periphery of the north court or plaza belonged to this early assemblage. The first round platform of Str. Q-84 may have been built at that time. An early structure under the colonnaded hall Q-81 was almost surely part of the original plan, but only a single doorjamb and some flooring were uncovered here. Irving's excavations back of the colonnaded hall Q-151 indicate that the substructure of the Caracol, Q-152, is very early, and although this does not necessarily date the building, it is likely that the terrace was intended for a round structure. Soon after this terrace was built, another building, probably a colonnaded hall, was added to the south, and a smaller structure, later to be replaced by Q-153, stood on the edge of the cenote. Definitely early deposits are not reported from the south half of the group, and here it is impossible to judge what the early arrangement might have been. We do know, however, that the two colonnaded halls adjoining the main pyramid and various shrines surrounding it were built much later. Originally, the great temple with its two small platforms probably stood in an open court vaguely delimited by buildings on the periphery.

The tenoned serpent heads in figure 7,b-e, which are so different from other sculptures of

Mayapan, and for which there is no precedent in the Puuc region, may have been carved in this early period, before the influence of Chichen Itza had begun to wane. The heads are all so similar that they could have been dismantled from a single structure. Some, or possibly even all, of them may have come from the vertical blocks above the balustrades of Str. Q-77, which were removed when the structure was altered.

If our reconstruction of the original layout of Mayapan is correct, the ceremonial center is seen to derive its main features from the earlier Toltec capital at Chichen Itza. For this there is some historical confirmation in Landa's statement that the principal building was called Kukulcan, after the founder of the city, whose name he also associates with Chichen Itza (Tozzer, 1941, pp. 20-24). Landa goes on to say that originally the ''enclosure'' of Mayapan encompassed only temples and houses of the lords and the high priest, and that an indefinite time later ''they ordered that other houses should be constructed outside.'' Since Landa describes the wall as much smaller in circumference than it actually is, and since there are very few houses outside it, we have looked for traces of an earlier wall that once may have enclosed only the ceremonial precinct. The wall that now surrounds it, however, is clearly post-Conquest, and there is no decisive evidence of an earlier wall. Possibly the ''enclosure'' meant is merely that formed by structures surrounding the courts of the Main Group. Landa's statement implying a period of the city's sudden expansion, however, is supported by the fact that the oldest remains seem to be concentrated in the ceremonial center, and particularly in the area north of the main pyramid. Excavations in house-mound areas yielded few deposits containing significant proportions of the Black-on-cream pottery that distinguishes early strata in the Main Group. Possibly, therefore, Mayapan was originally no more than a religious center of traditional type, and the building of the wall and the expansion of the settlement occurred at a later date when the city was organized as a capital for all the northern peninsula. This possibility should be taken into account when the historical ''foundation'' of Mayapan is interpreted in the light of its remains, for we do not know whether the reference is to the building of the earliest constructions or to a later event that precipitated the transformation of a religious center into a secular capital.

Various features of the architectural tradition represented by Chichen Itza persisted and were never completely eclipsed. The serpent-column façade, though corrupt in its execution, was retained as the dominant form of temple design. It is often accompanied by the sloping lower zone or ''talud'' that is characteristic of Toltec buildings, and the floor is usually at terrace level, not raised on a plinth. Stairways have sloping balustrades, which most probably ended at the top with vertical blocks, and serpent heads were sometimes placed at the foot of such balustrades.

The burial shafts of Strs. Q-58, Q-95, and T-72 can be compared to the shaft of the High Priest's Grave at Chichen Itza which, though apparently built by the Toltec, was still in use in Mayapan times. The original purpose of the High Priest's Grave may have been that of a tomb, but at Mayapan such shafts were probably used for the disposal of bodies of sacrificial victims, since they contain virtually no offerings to suggest normal burial. At Mayapan there are also numerous shrines that contain cists crammed with skeletal remains but devoid of offerings.

Another type of building that Chichen Itza and Mayapan have in common is the colonnaded hall, but there is a distinct difference in the halls of the two cities. The halls of Mayapan are complete, independent buildings. Those of Chichen Itza are more like galleries built as adjuncts to other buildings or rooms. There are no stairways at Mayapan such as that which leads down to the interior of a colonnaded hall in the Temple of the Warriors. In both cities the halls contain long benches interrupted by higher altars or thrones, but at Chichen Itza the altar projects forward into the room and the bench usually has a sloping back rest. At Mayapan, the bench is plain and the altar is narrower than the bench.

Among the minor items found at both sites are small pyramidal "sacrificial" altars. At Mayapan these are normally associated with temples, but one was found on the platform of a colonnaded hall, and another, which is carved, and therefore exceptional, comes from Group Z-50 at the end of the principal sacbe. Stone "banner holders" were used at Mayapan, but, unlike the holders at Chichen Itza, they are animal or grotesque figures. It is not clear what species is represented, and the fact that some of the creatures wear belts and perhaps even loincloths suggests that they may be human impersonators or mythical figures. Their heads are turned sharply to one side like the heads of Chacmools. No Chacmool statues, however, were found at Mayapan. It is possible that there had been stucco Chacmools when the city was first founded, but very unlikely that traces of them would have been missed had they been used with later buildings. Atlantean altar supports, on the other hand, survived, though corrupted to small stucco figures. The only certain examples are in Str. H-17, where the figures are in sitting position, but it is very likely that the figures on the altar of Q-97 were also atlantean. Large interior atlantean columns do not occur at Mayapan, where inner supports are plain columns or piers.

The contrast between Chichen Itza and Mayapan architecture lies largely in masonry construction techniques and in range of building types, which is greatly reduced at Mayapan. There is no veneer masonry here, and little vault construction. Columns are built of much lower and less well finished drums and have no capitals. The low-relief carving that decorates Chichen Itza colonnades is replaced at Mayapan by high-relief stucco figures, probably used only on façade columns, and the lavish use of stucco on all surfaces must have produced an effect of rounded contours sharply in contrast to the crisp, precise outlines of Chichen buildings.

The absence of the ball court at Mayapan is particularly striking, since ball courts were used by the Maya in Classic times, are very numerous at Chichen Itza, and are a standard feature of the later sites of the southern highlands. Possibly their absence is due to east-coast influence, which is predominant in masonry and in building types. The absence also of sweat houses and of buildings of the gallery-patio type points to the loss of customs that were practiced at Chichen Itza. Another missing building type is the tzompantli, though this may have escaped observation, since it can be identified only by its associated symbolism. A few scattered sculptures of skulls suggest that there may have been a tzompantli here at one time. Small groups built on rectangular courts, such as the court of the Temple of the Grinding Stones and the quadrangle attached to the House of the Phalli, may be added to the list of missing types. Thus, the features that were transplanted, so to speak, from Chichen Itza to Mayapan pertain almost exclusively to temple architecture, and may even be restricted to those that were associated with the dominant cult of Kukulcan-Quetzalcoatl.

The regional Maya tradition is even less conspicuous in building types, and survived mainly in the form of architectural detail. On Str. Q-151, masks designed in the Puuc style were reassembled from old pieces and used on the walls and piers of the building. Elsewhere, we find two- and three-member moldings like those used in the Puuc, though applied here to substructures, and from an older tradition there remain deep apron moldings, inset stairways, and rounded corners of terrace walls.

What is remarkable is a strong persistence, perhaps even a revival, of the stela complex, and the erection of the monuments near important buildings rather than on isolated platforms, as seems to have been the custom in the Puuc region. At least 13 of the Mayapan stelae were sculptured, and we estimate that there were 25 or more plain monuments. Many of the plain ones were made of very poor, shell-filled limestone, and are so badly battered and broken that they are hard to identify and impossible to classify by form. It is sufficiently clear, however, that even the sculptured monuments, some of which I formerly associated with Puuc remains (YB 51, p. 256), are not re-used pieces, but were carved at Mayapan, and that the practice of erecting stelae persisted, if not throughout the period, at least for a considerable time.

The best-preserved monument, which was moved from the site and placed in the hacienda at Xcanchakan some time after Brasseur de Bourbourg's visit to the ruins in 1866, is designated by Morley as Stela 9 in his The Inscriptions at Copan (1920, pp. 574-75) and as Stela 1 in his later writings. Morley reads "10 Ahau" as the date given by a small glyph contained in the sculptured panel, and suggests a long-count position of 10.18.0.0.0 for this date. He points out the very close similarity between the scene depicted on the stela and that on page 11 of the Paris Codex, which is one of a series of pages pertaining to consecutive katuns. Other long-count positions that a Katun 10 Ahau can hold in the Classic calendar are 10.5.0.0.0, 11.11.0.0.0, and 12.4.0.0.0. A later date in the long count than that proposed by Morley would probably be favored now.

The upper panel of this stela is composed of blocks on which the main part of the inscription was probably painted, for they show no signs of having been carved. The panels are separated by a band which includes a fringe or pleat motif that is very characteristic of the Mayapan style, but occurs on decadent monuments from a few other sites, notably Kayal, Campeche (Proskouriakoff, 1950, fig. 99c). The paneled arrangement is standard at Mayapan and undoubtedly stems from an earlier style that is best exemplified by Stela 3, Oxkintok (op. cit. fig. 8,a). The pleat motif is used on the outer border of this monument, and the month position of the day Ahau is given as 2 Kayab, in accord with the system of numeration used in colonial times, and not with the standard system of the Classic era or of Chichen Itza. A date of 10.1.0.0.0 has been suggested for this monument.

There are two other legible Ahau dates from stela fragments at Mayapan. These are from Stelae 5 and 6, and the dates are 4 Ahau and 13 Ahau, for which Morley suggests the positions 11.1.0.0.0 and 11.3.0.0.0. Both Ahau Katuns are associated in native histories with events relating to Mayapan, though their long-count positions are not given. The first is the katun when "four divisions" met at Chichen Itza prior to the settling of the country, and the second is expressly cited as that of the "foundation" of Mayapan: 'u hetz'cob cah Mayapan." Both dates together with 1 Ahau occur on an altar figure from one of the residences near the Main Group (see part 4, fig. 4,e), and Roys suggests that a revolt taking place in the previous katun established the Cocom in 1 Ahau as lords of Mayapan, who, during their reign, brought the Ah Canul into the city.

Because of the mention of the 10 Ahau date, which is associated with the advent of the Xiu, it is tempting to attribute to them the introduction of the stela cult, especially since they expressly claimed to have "taught letters" and belonged to the western "division"; but there is little agreement among historians on the role played by the Xiu in the history of Mayapan, and Roys believes them to have been latecomers to the region. It is an interesting fact, however, that there are two unsculptured stelae at the west gate of the city and none at any of the other gates.

All but two of the sculptured monuments appear to have been carved in the paneled style, with an upper panel of glyphs and scenic panels below. Two, however, are aberrant. Stela 7, which lies on the Caracol platform, depicts a person in full front view, probably in sitting posture, which recalls some of the monuments from Piedras Negras, though the Mayapan carving is crude and lacks the elaborate symbolism that goes with the Piedras Negras figures. The second monument, Stela 14, found near another round building, Q-126, is carved in the style of the idols of Mayapan, and may in fact be an idol rather than a stela. It is classed as a stela because it seems to have stood outside and because its slablike back suggests the stela form.

Unsculptured stelae at Mayapan have several different shapes. The majority, like the sculptured stelae, are slablike and rounded at the top. These may have been plastered and then painted with the usual paneled design. At least two, however, have centrally located pits or depressions for which we have no explanation. A number of smaller monuments are rectangular, and there are fragments with an almost pointed, tapering top, which we have classed as parts of stelae, though no complete monument of this form is known.

The stelae are concentrated in the main ceremonial group, and are seldom found in outlying areas. One small stela, however, was centered on a shrine near Cenote X-Coton, and two others, already mentioned, are at the west gate. Stela 11, described by Patton as having glyph blocks and a sculptured panel, is said to come from a platform a few meters south of the Rancho San Joachin. This monument was not identified in our explorations. Two other small upright stones found in other house groups could be classed as stelae, but their function is doubtful. In the Main Group stelae are found in various locations but seem to have a particularly strong association with round structures, for a number cluster on Strs. Q-84, Q-126, and Q-152. This may seem odd, since the round building is not a common Maya form. However, if the stelae were historic rather than astronomical or calendrical monuments, the explanation may lie in an association of the round buildings with Kukulcan, the founder of the city (not the god). This accords also with Landa's remark that the Mayapan monuments marked the establishment and destruction of the city (Tozzer, 1941, p. 38).

Flat, round "drum" altars were used at Mayapan, but not specifically with stelae. Most of them are of the same shape and size as column drums, and can be recognized only when they are centered on some architectural feature. Many, no doubt, are actually column drums dismantled from old buildings, but one, located near Str. Q-88b, is much larger and was certainly cut to be used as an altar. Column-drum altars occur sometimes in house shrines and seem to have no constant association with any building type.

Another kind of "altar" at Mayapan is in the form of a low, round shaft, encircled by a heavy molding and terminating in a bulbous top. In contrast to the pyramidal "sacrificial" altars, which are most often associated with temples, these small shaft or "column" altars are sometimes found in residential groups and tend to have a stronger association with shrines. Two rested on terraces of shrines subsidiary to colonnaded halls (Q-148, Q-89); one stands in front of a colonnaded hall, centered on its stairway shrine (Q-141); and a fourth was placed in a niche inside a shrine (H-18). These altars recall the column altars of Piedras Negras, the upright altars of Bonampak, and the "picotes" of the Puuc region. Though they vary in form, they seem to comprise a single group, which is of Maya origin and is limited to the western half of the peninsula.

There are also a number of small, round and rectangular masonry constructions that seem to have served as altars, though it is hard to distinguish some of them from small shrine foundations or monument platforms. These may stem from the east-coast tradition and are almost certainly related to the altar platforms typically found in house groups.

Maya and Toltec features at Mayapan tend to be obscured in the general resemblance of its architecture to that of Tulum and other sites of the east coast of Yucatan. The outstanding features of this architecture are its crude masonry, its lavish use of stucco, and its numerous beam-and-mortar roofs, diminutive shrines, and stucco statues. Some of these features can be noted in the earliest Mayapan structures, but there is reason to think that the similarities were intensified as time went on by an increasing emphasis on shrine worship. The numerous small shrines housing stone or stucco statues are for the most part secondary or late constructions at Mayapan. They are strongly associated with the use of figure censers and with stone "altar figures," neither of which appear in the oldest deposits. Until we have a definite sequence of constructions from the east coast, however, we cannot be sure whether a parallel or a converging development was taking place. At any rate, the intensive use of the small shrine evidences a radical change from earlier Maya religious practice, reflecting the breakdown of a unified system of worship and very probably the rise of more anthropomorphic conceptions of deity, of ancestor cults, and of what the Maya themselves termed "idolatry."

In addition to shrines, three other Mayapan building types—the serpent-column temple, the colonnaded hall, and the oratory—have very close analogies on the east coast, but the typical Mayapan assemblage does not appear on site maps from this area. Moreover, the building plans from the coast are much more variable, and their standardization at the capital appears to be a purely local development.

The round type of building exemplified by the Caracol was apparently not in common use on the east coast, though one is described at Paalmul (Pollock, 1936, pp. 115, 116). Burial shafts in temples are not reported but may be found when more buildings are excavated. Nor do we know yet whether east-coast shrines, like many at Mayapan, contain ossuary cists, and whether the burial of sacrificial victims in this manner has a specific association with shrine worship.

There are a number of minor structural differences between the architecture of Mayapan and that of the east coast. On the east coast the columns of buildings are usually made of higher and better-worked drums, and many have capitals. There has not been enough excavation here to show whether high-relief stucco figures were ever used, but the different construction of the columns argues that they were not. Perhaps Mayapan borrowed the idea from the carved stone columns used earlier in western Yucatan on such buildings as Str. 3C7 at Oxkintok, a site that also provided a good prototype for the Mayapan stelae.

Vaults are more frequently used to roof buildings on the east coast, and walls sometimes have an outward slope or "negative batter" that we have not observed at Mayapan. Stucco statues are common in both places, but it is only at Mayapan that we find statues made of stone. Such statues, or idols, are often carved in parts, separately tenoned into masonry or attached to each other with mortise-and-tenon joints. As far as we can tell, they served the same purpose as stucco figures but tend to be somewhat larger. They are for the most part crudely carved, and it is very likely that they were coated with thick stucco on which much of the final detail was executed. Standing and sitting figures, male and female, are represented in these statues, and they are predominantly human, lacking the facial characteristics of Maya deities that appear on some of the pottery incense burners.

No definite influence from the rising empire of the Aztec can be detected in the architecture of Mayapan, but a few sculptured and painted motifs give a hint of indirect contact, probably through Tabasco and coastal Veracruz. Such, for example, is the profile of the walls of the temples shown on the mural in Str. Q-80. This profile is often seen in Mexican codices, and the form could have reached Mayapan through its contacts with the Veracruz coast, where the same profile can be observed on the heavily stuccoed Templo de las Caritas, at Cempoala. Forms usually attributed to the Aztec appear also on a small number of sculptures. The squatting idols in figure 10,e and f recall the pose of the idols of the highland Mexican area. The god figure in figure 10,c seems to have the attributes of the Maya God D, but the female figure, although also probably a Maya deity, resembles Mexican figures both in general form and in the detail showing a triangular shawl, which was characteristically worn in Mexico and possibly on the east coast, and not among the ancient Maya.

Two stucco sculptures, that in Str. H-18a at Itzmal Ch'en (CR 34, fig. 1,b) and the stucco monster of Str. Q-159, use the skull motif on the joints of a figure, in a manner that is very reminiscent of the "earth monster" motif of Mexico. An even clearer analogy with an Aztec motif is presented on the low-relief panel in fig. 11,b, where, behind the monkey, is a flint knife with the features of a skull, identical to Mexican representations of Tecpatl.

There remain a few sculptured forms for which there seems to be no known precedent. One is an upright monument at the base of which is a projecting sculpture. Two small, pointed monuments of this form are associated with colonnaded halls. The monument found displaced on

Str. H-15 at Itzmal Ch'en (fig. 10,x) apparently represents a jaguar, which is carved in high relief on both sides of the stone, with its tail and head projecting from the narrower ends. The other, which is still in place on the terrace of Str. Q-97, is so battered that the motif is not clear. A tall rectangular shaft from the plaza north of the Castillo (fig. 11,f) likewise has high-relief sculpture projecting at the bottom from its narrower sides, and, though very different in form and proportions from the others, may represent a variation of the same type. Near by is a large, narrow serpent head (fig. 7,a) which may be in some way associated with this monument. The small figure riding astride the head is a typical Mayapan conception that we have mentioned elsewhere. The serpent head is apparently part of a larger composition, but there is nothing in surrounding remains to suggest how it was used. In addition there are a number of pieces, some square, some round, carved with a large three-member molding, such as the piece in figure 11,e, and several odd carvings (fig. 11,a and h), that have not been identified.

''Ring sculptures'' form an interesting group that has not been reported from other sites. Small sculptured rings such as that in figure 8,t, representing a bird's head, may have served as cordholders, and are well known, but at Mayapan, rings of another type were set in pairs into the floor, sometimes just outside a shrine (Str. R-89), sometimes within one (Str. Q-146a, H-17a). The surviving ring in Str. H-17a is carved in the form of a serpent head, and near by in the debris were found three others (fig. 8,m-o). It has been suggested that these rings were used to bind prisoners for arrow sacrifice, but we have no factual or documentary confirmation of the idea. The sculptured jaguar in figure 8,v was found just outside the central doorway of a colonnaded hall and may represent the same or another variety of ring sculpture.

To gain an over-all impression of the Mayapan style of sculpture and architecture from its ruined remains is not easy, since so much of its visual effect depended on stucco and painting that what we actually see amounts to little more than a skeleton of the final forms. Fortunately, the qualities of the art style are somewhat better preserved in the numerous fragments of pottery incense burners scattered near the shrines. These, together with what one can see of the eroded sculptures, exhibit a rigid and forthright style, concerned more with express symbolism than with nuances of form; realistic in the portrayal of the human figure and of animals, but apt to be highly grotesque in the expression of religious concepts. The pose of the human figure is usually static and nearly symmetrical, whether the figure is sitting or standing. The diving-god pose that occurs on the east coast is used in pottery representations and in small sculptures. It has not been observed in architectural ornament, probably only because we have no remains of stucco from the upper façade of any building.

The standing figures are squat and heavily attired in ceremonial robes. They have sharp features, and the broadness of their faces is accentuated by the placement of the headdress low on the forehead, just over the brow ridges, which are somewhat more prominent than in Classic sculpture. The eyes are sometimes depicted with a heavy upper lid and are nearly oval. These faces are more Toltec than lowland Maya, and only in the heads of some of the traditional gods do we get the hint of an older conception of beauty in receding, narrower foreheads and slightly slanting eyes.

Facial features tend to be typical rather than individual. Identity is conveyed by express symbols. Most of the variation in the figures is in the symbols used, the forms in themselves being standard, repetitive, and sterile of artistic modification. For this reason, figures in this style can be easily recognized by common symbolically neutral details of dress and mannerisms of design. A partial list of costume details would include: flaps dropping in a straight line from the headdress to the shoulders behind round ear plugs; collars bordered with widely spaced beads; loincloths with wide, plain ends that hang low in front and behind; short skirts, usually open in front; sandals fastened by a strap at the ankle, from which a wide tongue falls to cover the instep;

and sometimes fringed bands worn just under the knee. Some of these details can be traced back to Classic Maya dress, but the headdress flap and the sandal type are foreign elements, probably introduced from the east coast, and particularly indicative of this late period.

One constantly recurring detail is a curved fillet ending in two scrolls and having two attached dots. It appears under the eyes of serpents and of Maya gods, and independently or on a leaflike element between two scrolls, symbolic of the corn plant. It also occurs in the Maya codices and on Tulum and Santa Rita murals and is a good diagnostic trait for the period. The codex-derived mural style that is seen at these two sites was not observed at Mayapan, but mere destruction of many paintings may account for its absence. It is reflected quite clearly in the carving of the stela at Xcanchakan and provides us with at least two other diagnostic traits: the tall expanding headdress, and the scrolls placed on each side of a panache of plumes. The latter is also characteristic in what is called the ''Mixtec'' style, and is occasionally seen on bas-reliefs of Mexico.

The metamorphosis of the serpent at Mayapan is another interesting feature of the style. The traditional formal details, such as the scrolled supraorbital piece and the volute that issues from the corner of the mouth, are simplified and often omitted altogether. The serpent has clawed forefeet that transform him into a kind of dragon. This form first appears on late sculptures from Copan, Honduras, and it is not clear how it reached Mayapan. One such monster (fig. 6,k) appears to have extruded eyes. Others are accompanied by a minor grotesque or human figure (fig. 7,a and s).

In spite of these extravagant grotesqueries one feels that a basic substratum of Classic Maya tradition underlies the dominance of the serpent motif. Other animal figures, such as the monkeys and the lizards, occur rarely, and mostly in outlying house groups. Though there are historical allusions to animal symbolism and the suggestion of military orders, no symbolism like that of the jaguars and the eagles at Chichen Itza has been uncovered at Mayapan. The common use of the turtle in altar figures and the representation of animals in pottery are associated with shrines and with private worship. Even the great proliferation of statues in the Main Group does not entirely obscure the fact that the larger temples continue to feature the traditional Maya theme that centers on the grotesque portrayal of the serpent as contrasted with the far more natural rendering of the jaguar, an example of which (fig. 7,t) we find in the half-ruined statue at the base of the Castillo.

I am not able in the light of these facts to assess the theory of ''Mexican absorption'' or ''Maya resurgence'' once put forward by Thompson (1945, p. 18). The persistence of certain Maya symbolic forms certainly seems extraordinary when we consider the weight of evidence for radical alterations in the intent and organization of ritual. On the other hand, the coexistence of incongruent elements in the art forms of Mayapan is sufficiently striking to suggest that the conflict of several traditions had not yet been successfully resolved and that its outcome could still be influenced by historical events. The cultural situation appears to me to be better described as an incomplete fusion of traditions than as a recuperation of the native Maya culture. If Maya elements regained ascendancy in the Colonial Period it may be because the fall of Mayapan affected the aristocracy more radically than the native population. Perhaps ultimately it will be possible to compare data from Mayapan with other remains pertaining to peoples who similarly had regained a measure of independence after a period of subjection to a foreign power. We may then be better equipped to appraise the typical aspects of the situation and to discuss its intrinsic potentialities.

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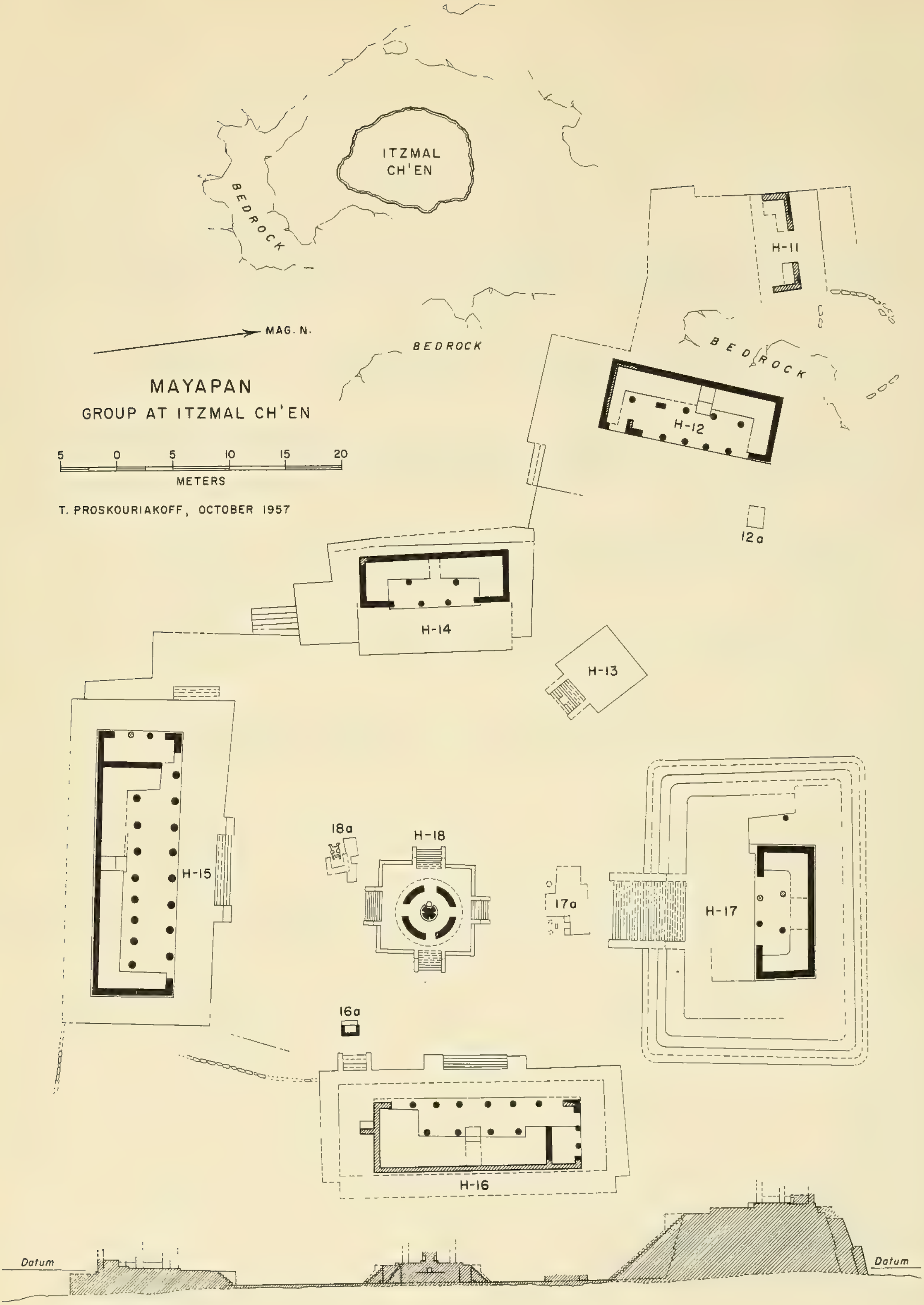
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T. PROSKOURIAKOFF, OCTOBER 1957
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H-12
12a
H-14
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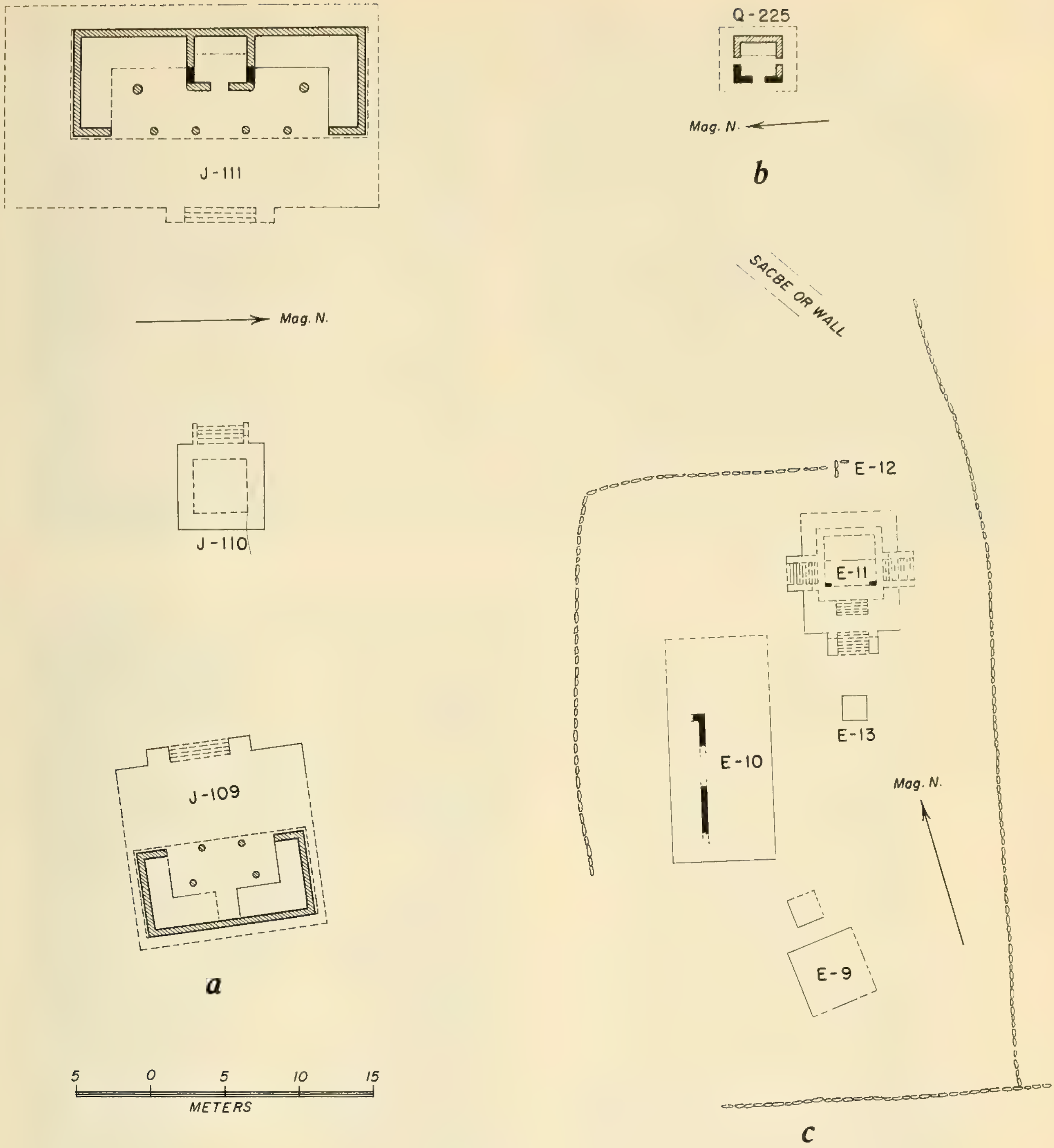
FIGURE 1. Plan and north-south section of the group at Itzmal Ch'en.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E-12
E-11
E-10
E-13
Mag. N.
E-9
c

FIGURE 2

a: Basic ceremonial group, composed of Str. J-111 (colonnaded hall), Str. J-110 (shrine), and Str. J-109 (oratory). Based on map of site and notes of K. Ruppert and A. L. Smith.

b: Isolated shrine, Str. Q-225, after K. Ruppert and A. L. Smith.

c: Plan of Str. E-11 and surrounding constructions, after K. Ruppert and A. L. Smith.

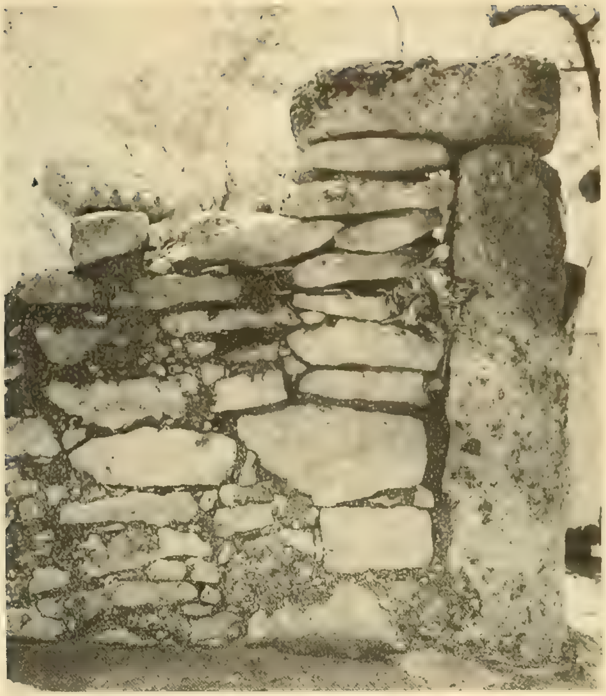
FIGURE 3

a: Large jambstone used at the end of north wall of Str. Q-97. Note irregular wall masonry and thick coat of mortar and chinking.

b: Jamb of southwest doorway of Str. Q-80, built partly of vertical stones.

c: Vault masonry at end of north chamber or passage in Str. Q-80.

d: Picture of temple, reconstructed from fragments of mural in Str. Q-80. Data from several of the temples shown have been used.



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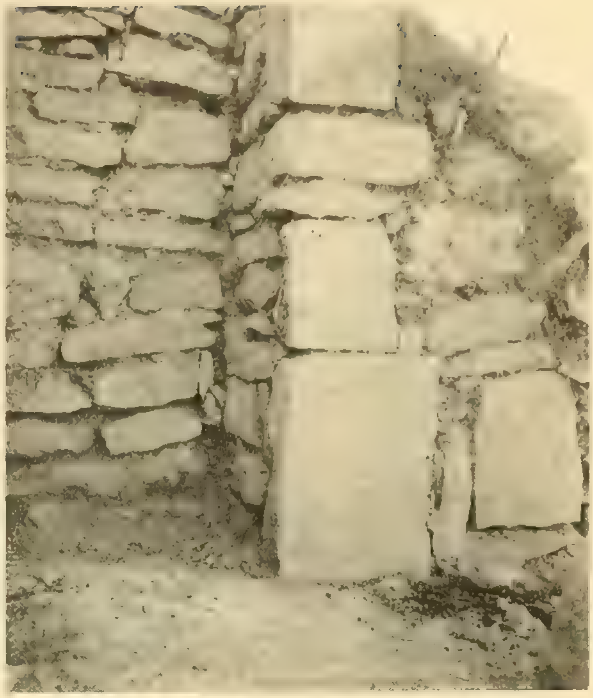

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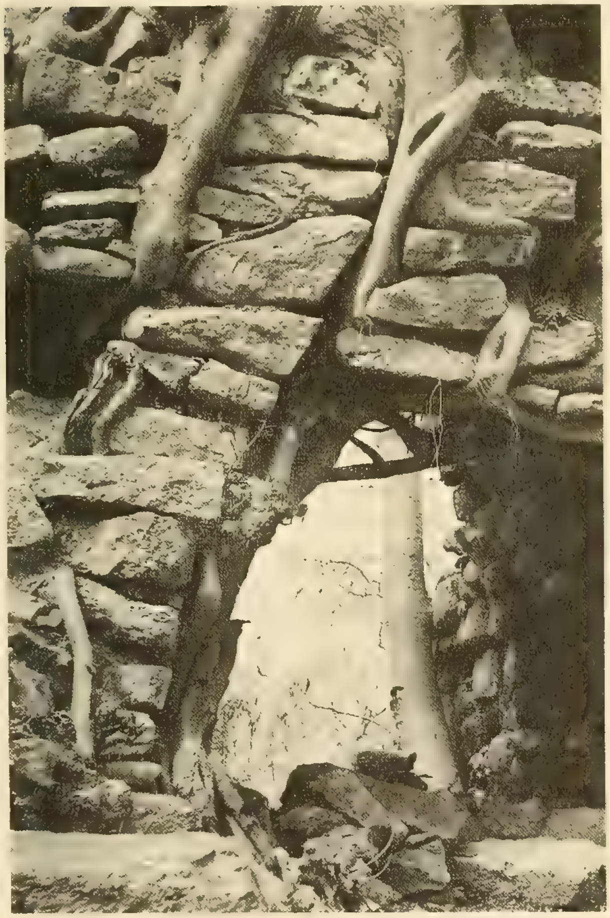

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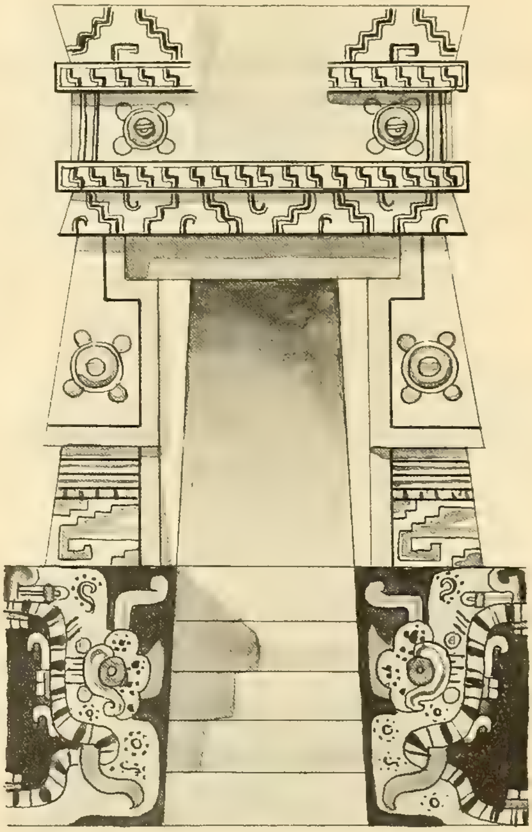

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FIGURE 4

a-*j*: Details of terrace and platform walls, illustrating various forms and types of masonry used at Mayapan. The masonry is shown restored, but with all surface mortar and plaster stripped. *a*, terraces of Str. Q-58; *b*, terrace of second period of construction, Str. Q-95; *c*, terrace of the Caracol, Str. Q-152; *d*, secondary addition to terrace of Str. Q-149; *e*, column drums used in corner of platform of Str. Q-212; *f*, well fitted masonry, platform of Str. Q-127a; *g*, buried wall of platform of Str. Q-155 (lower two courses unexcavated); *h*, platform of Str. Q-71, made almost entirely of Puuc stone; *i*, latest platform of Str. Q-69, mortar and upper courses are restored; *j*, well cut cornerstone in platform, Q-215.

k,*l*,*n*-*p*: Typical Puuc stones. *k*, boot-shaped vault stone; *l*, wall stone; *n*, coping stone; *o*,*p*, molding stones.

m: Gutter spout from roof of Str. Q-212.

q: Section through altar of Str. Q-145, showing thick coat of plaster used on surface.

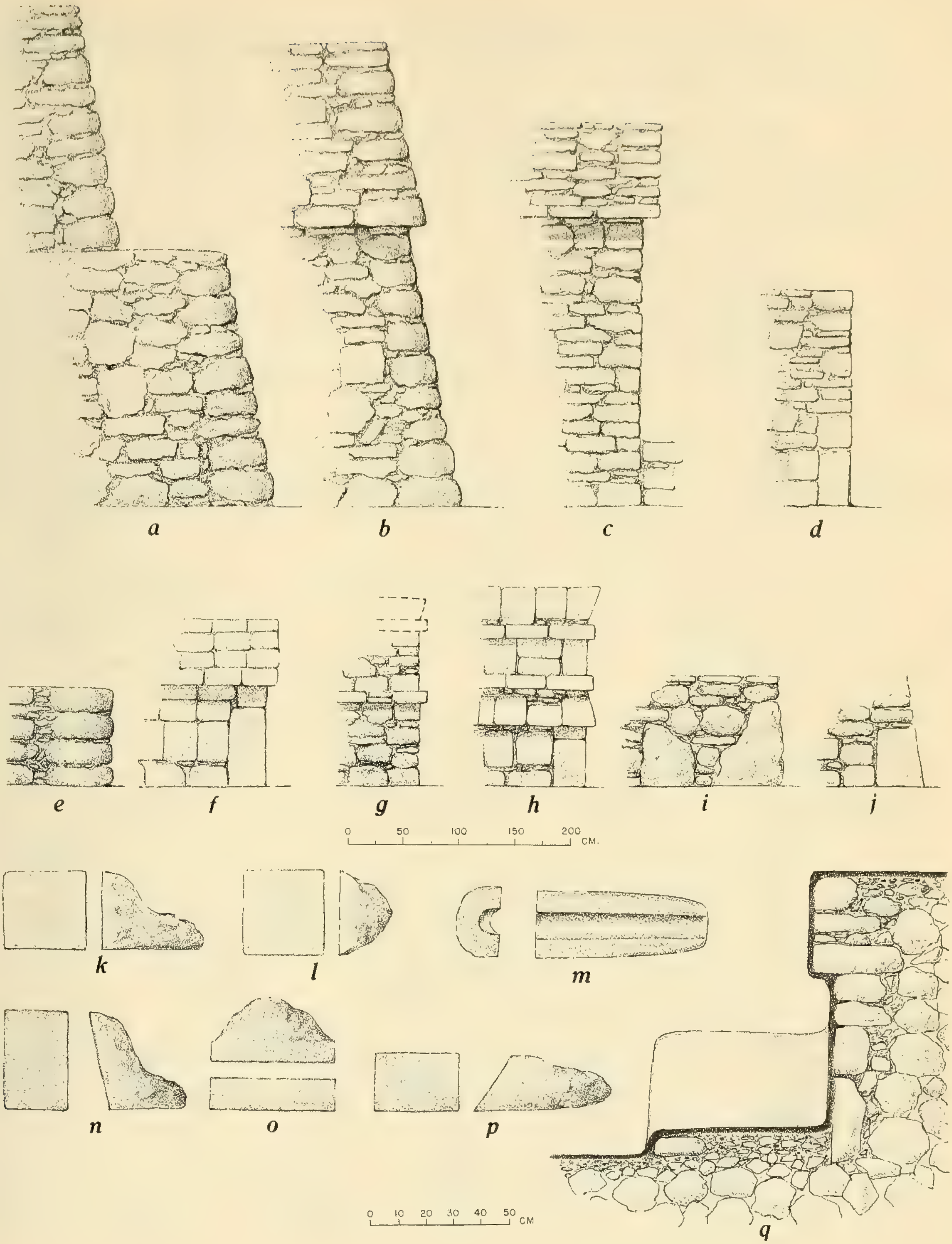
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FIGURE 5. Puuc stones and Mayapan imitations.

Most of these stones were re-used, and many were found singly, apparently used in masonry, and concealed under a coat of plaster.

a-f:	Eyepieces of masks. *a,b,d,f*, from Str. Q-151. Several examples, two in court north of Castillo. *c,e*, from Str. Q-148.
g,h:	Elements from fillets of mask headdresses. *g*, found near Str. Q-214; *h*, from Q-151.
i:	Unknown, possibly element from fillet, near Str. Q-126. Scattered elements of this type in various locations.
j-o:	Scroll elements. *j,k*, from plaza north of Castillo. *l*, near Str. Q-214; *m-o*, from group at Itzmal Ch'en.
p-r:	Mask earplug elements from Str. Q-151. Several examples of each.
s:	Scroll from Str. Q-148.
t,u:	Interlacing strand motifs. *t*, from Str. Q-90; *u*, from Str. Q-80.
v,w:	Dentate squares, probably originally placed diagonally surrounded by dentate elements such as *gg*, *hh*. *v*, re-used in Str. Q-73.
x:	S-scroll element, near Str. Q-126.
y:	Element of mat or grid motif, near Str. Q-126. Rare. Another at Str. Q-80.
z:	Cross element, from Q-87a or Q-88a.
aa,bb:	Dentate triangles from dentate zigzag motif; see *gg,hh*. *aa*, Str. Q-88a; *bb*, Str. Q-142.
cc:	Stepped triangle from band of bench in Str. H-16.
dd:	Fret, Str. H-16.
ee,ff,jj-mm:	Various examples of the guilloche or bead-and-fringe motif. *ff* is probably of Mayapan manufacture. *ee* is doubtless earlier. Others uncertain. Many scattered examples.
gg,hh:	Dentate elements used diagonally in zigzag. Many examples. *hh*, probably Mayapan imitation of the Puuc element, is from near Str. Q-214. *gg*, from near Str. Q-126.
ii:	Serpent head found on Str. P-110. Unique.
nn:	Unidentified element, near Str. Q-151.
oo-qq:	Spool elements. A number of scattered examples. Several near Str. Q-126.
rr:	Nose of mask; found near Str. Q-126 (not to scale).
ss,tt:	Fret elements.
uu:	Element of guilloche. On Str. Q-163.
vv,yy,zz:	Mouth elements of the serpent motif? Near Str. Q-151.
ww,xx:	Rosettes, near Str. Q-151.

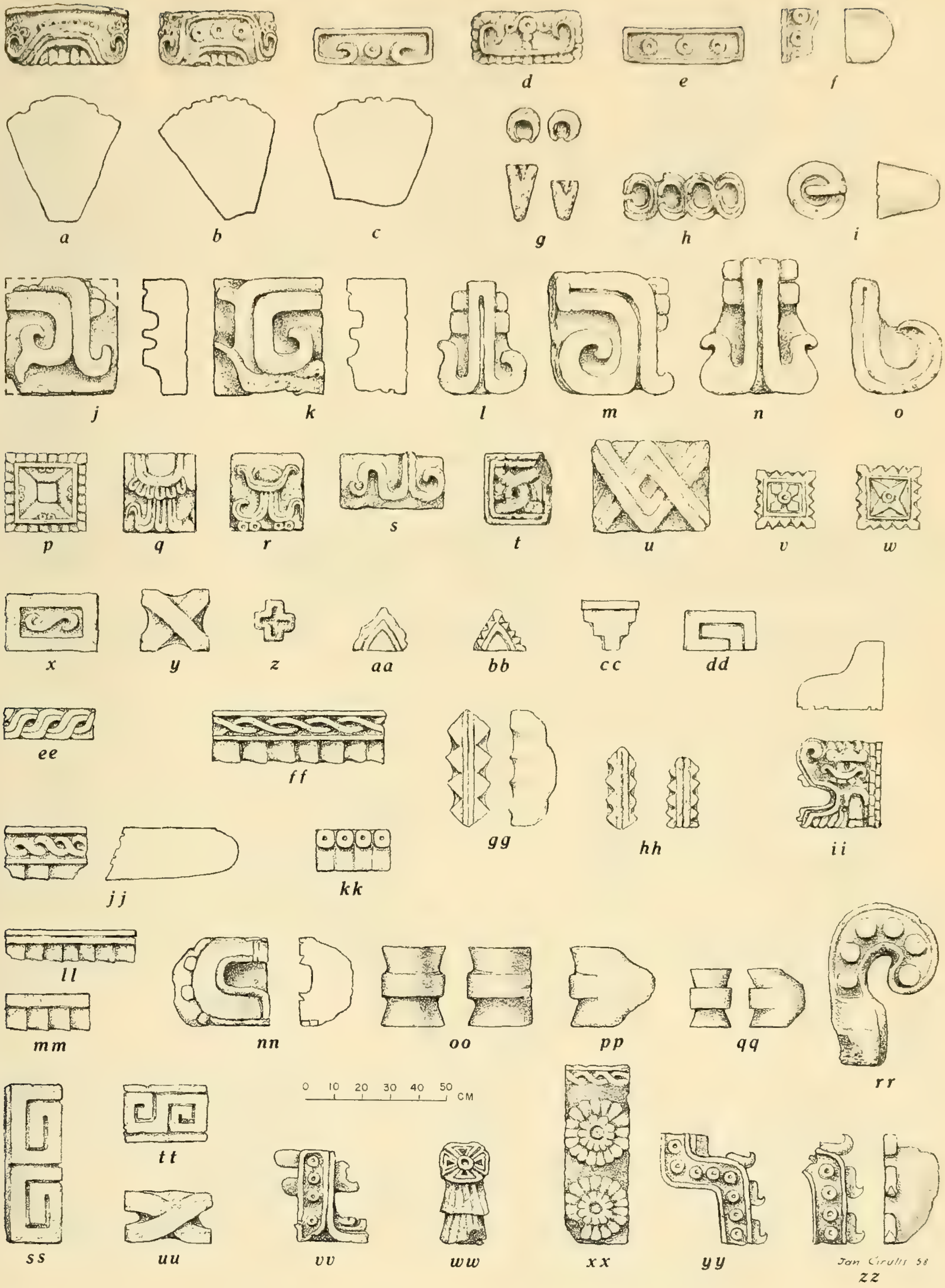
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FIGURE 6. Serpent-column sculptures.

a-h:	Serpent tails. a,b, from Str. Q-58; c, from Str. Q-143; d, from Str. Q-159; e, from in front of Str. Q-218; f, from Str. Q-218; g, found in debris of Str. Q-163; h, from the Castillo, Str. Q-162.
i-l,o:	Serpent heads. i, from south column of Str. Q-143; j, from column of Str. Q-218; k, from foot of balustrade of the stairway to Str. Q-218; l,o, fragments from Str. Q-58.
m,n:	Human hands of monster from Str. Q-218.

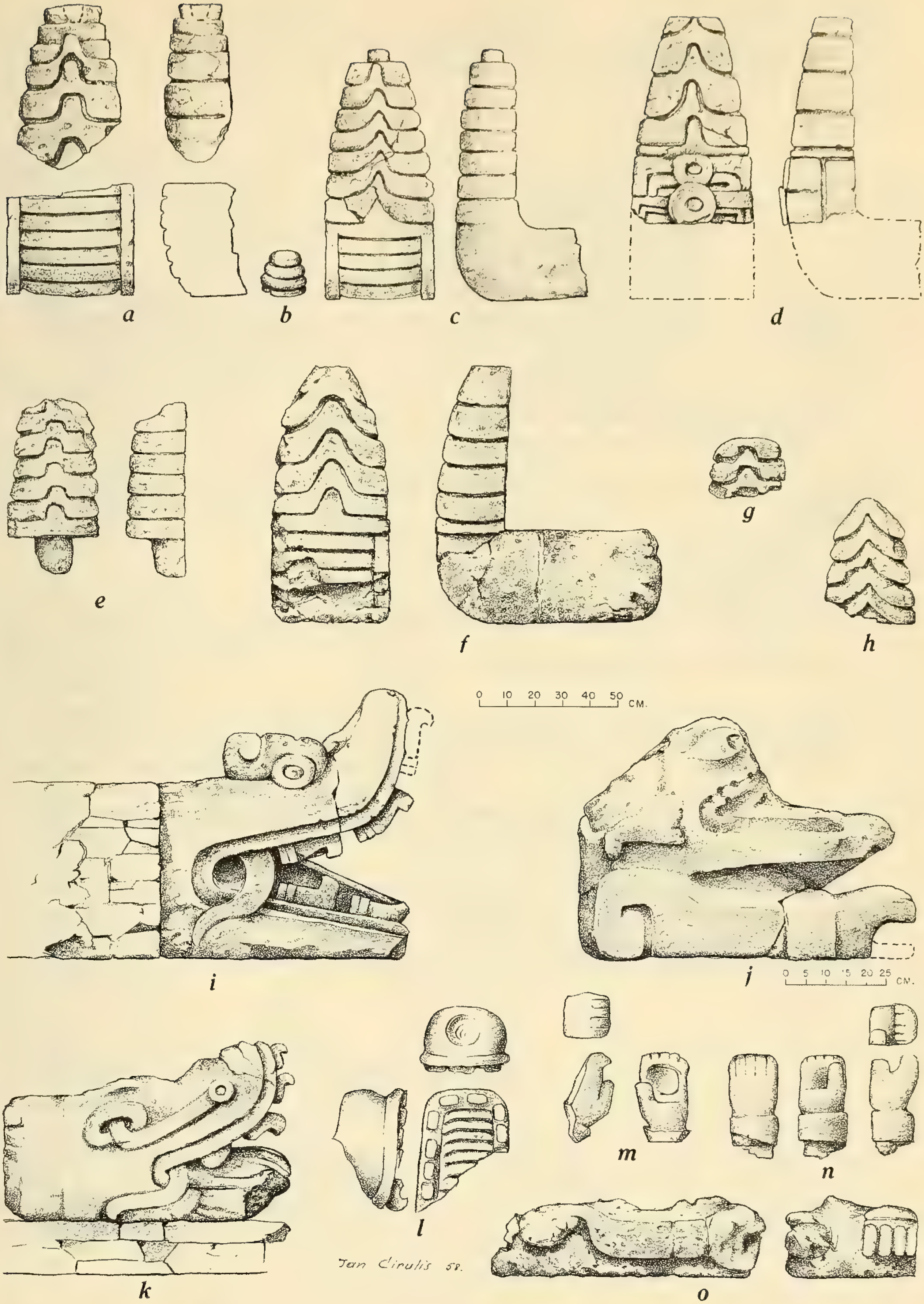
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FIGURE 7

a:	Top and side views of large serpent head on Str. Q-84; head of small figure on top is missing.
b-*e*:	Tenoned serpent heads of Toltec type. *b*, from area in front of Caracol, near idols in fig. 9,*a*,*b*; *c*, from balustrade of Str. Q-82; *d*, from modern wall in front of Str. Q-82; *e*, from court north of Castillo, west of Str. Q-77.
f-*i*:	Serpent-eye elements. *f*-*h*, from area back of Str. Q-90; *i*, from plaza in front of Str. Q-159.
j:	Unidentified sculpture from surface of Str. Q-163.
k-*n*:	Serpent-mouth elements. *k*, from area back of Str. Q-90; *l*-*n*, from Str. Q-149.
o:	Unidentified element at base of Str. Q-149.
p-*r*:	Remains of stucco figures on columns. *p*, feet of figure on northeast column of Str. Q-163, shown with figure remains from another location of same colonnade; *q*, part of stucco face from Str. Q-156, and hands from Str. H-18a; *r*, foot of figure on column of Str. Q-156.
s:	Stucco monster at foot of serpent column of Str. Q-159. Shaft of column is higher than shown.
t:	Stucco figure of jaguar near southwest corner of Castillo pyramid. Note sculptured stone core.
u:	Head of stucco statue from Str. Q-146.

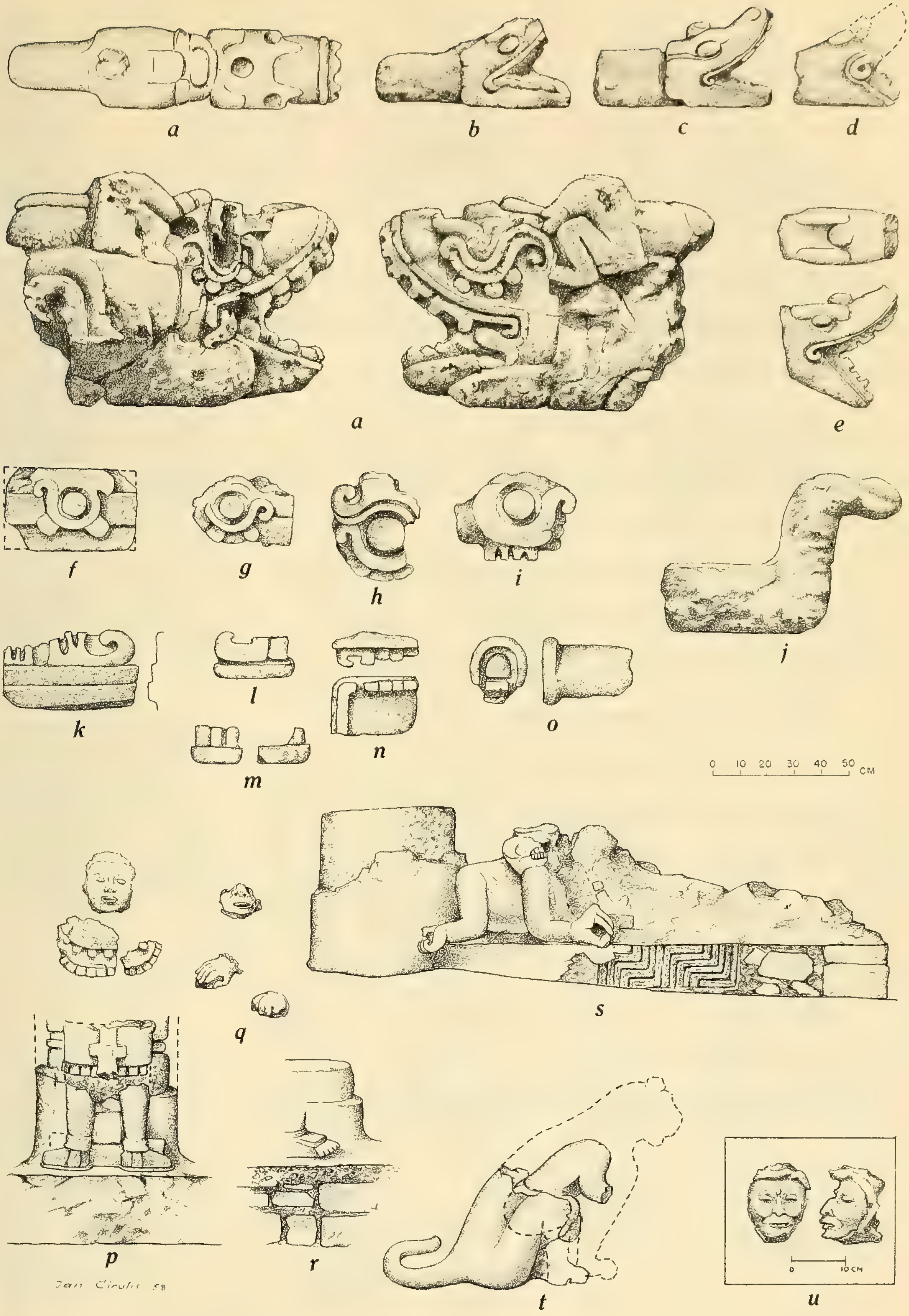
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FIGURE 8

a: Fragment of stone head from fill of Str. Q-84.

b: Sculptured hand from Str. Q-149, probably belonging to head in *c*.

c: One of three heads of similar design found in debris of Str. Q-149.

d: Stone head found on Str. H-15.

e: Stone head from Cenote Ch'en Mul.

f: Sculptured head in beak of bird or turtle, from Str. Q-126.

g: Stone head found on Str. P-33b.

h: One of several stone skulls found in area north of Str. Q-214.

i: Tenoned head from same location as *h*.

j: Stone jaguar head, exact location unknown.

k: Head of dog, from Cenote X-Coton.

l: Head of alligator, from Str. J-71b.

m-*p*: Ring sculptures, from Str. H-17a.

q: Stone ring from Str. Y-2d.

r: Object set in floor of Str. Q-172. Deep round socket in top.

s: Ring stone found near Str. Q-126.

t: Stone ring from Str. Q-151.

u: Stone ring from Str. Y-2d.

v: Ring sculpture found in doorway of south range, Str. Q-156.

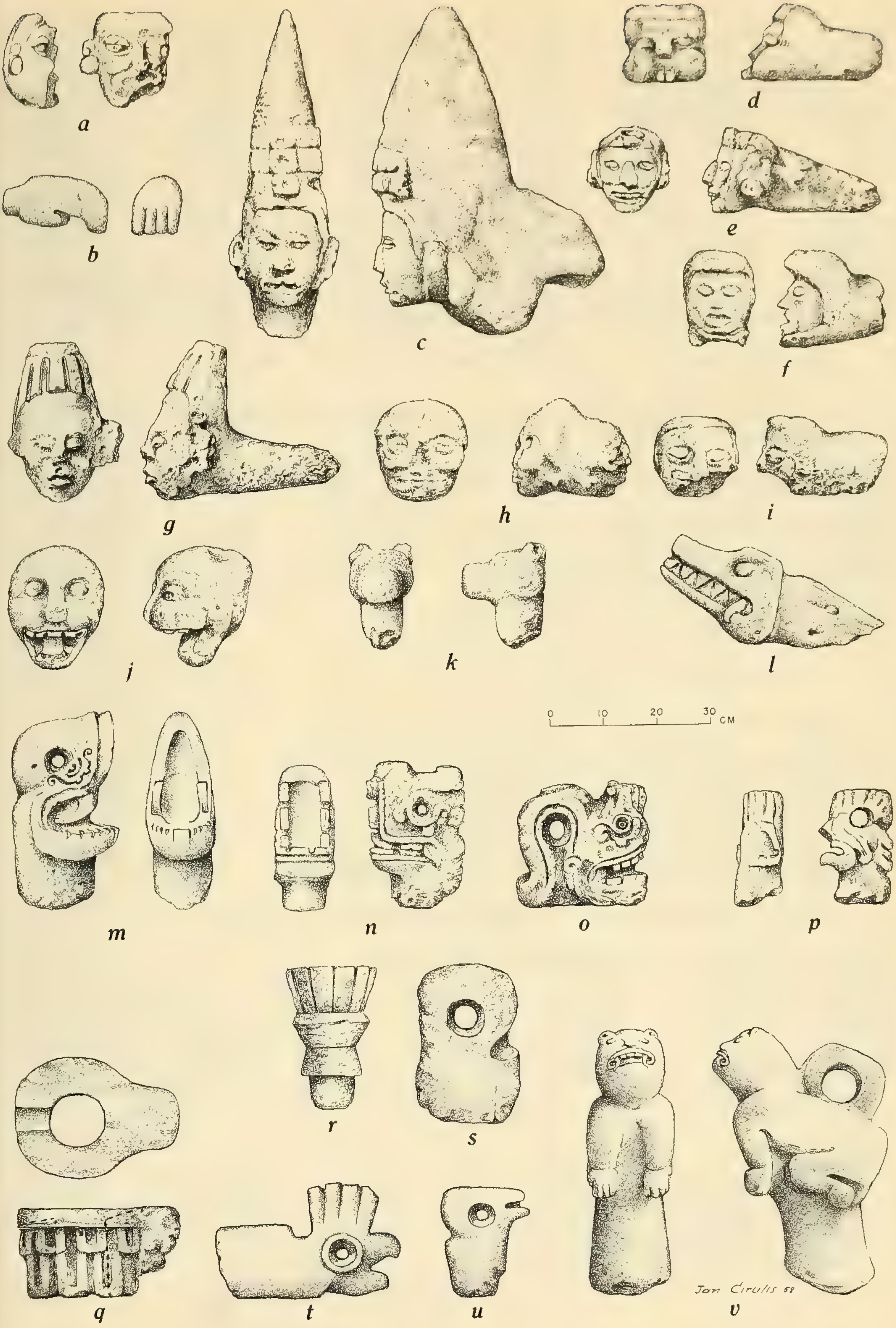
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FIGURE 9. Stone idols.

a: Female figure with back tenon; near northeast corner of Str. Q-161. Probably one of the "monuments" figured by Brasseur de Bourbourg as aligned in front of the Caracol.

b: Male figure from same location as *a*. Back of this figure is finished.

c: Figure found on summit of Str. Q-69, apparently in shrine chamber. Back of upper torso is finished. Legs tenoned.

d: Rear and side views of figure lying just north of Str. Q-69.

e: Torso of figure at southeast corner of Str. Q-69.

f: Figure found in the vicinity of Str. Q-90.

g: Torso at southeast corner of Str. Q-69.

h: Figure of bound captive (?) lying northwest of Str. Q-69.

i: Torso lying just east of Str. Q-69.

j: Unidentified carving near north entrance to Castillo court.

k,*l*: Two heads found in debris around Str. Q-69.

m: Head of idol lying near idols *a* and *b*. Note depression on top.

n: Stone hand, found on Str. Q-69. Depression 3 cm deep between fingers.

o: Head lying near *d*. Pits in headdress are 5 cm deep.

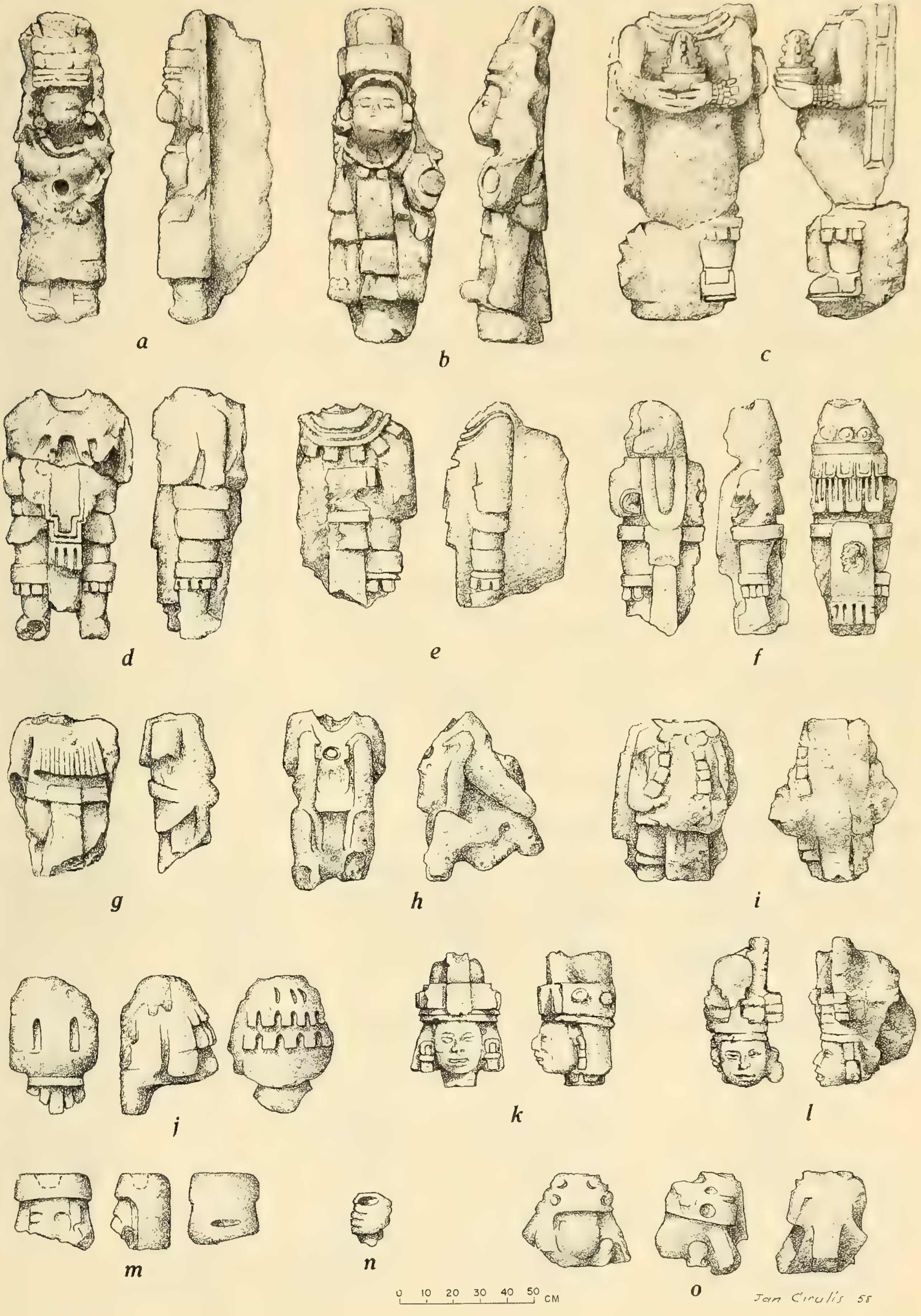
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FIGURE 10

a: Idol lying near Str. Q-98.

b: Female torso near shrine Q-157a.

c: Seated idol, possibly representing God D, in court north of the Castillo.

d: Fragment of idol near Str. Q-98.

e: Small seated idol from Cenote X-Coton.

f: Seated idol from stairway shrine of round temple, Q-214.

g: One of a pair of zoomorphic banner holders found in open area north of Str. Q-214.

h: One of two banner holders in front of Str. Q-159.

i: Fragment of idol near shrine Q-71.

j: Feline claw, buried in debris of Str. Q-71.

k: Badly eroded figure of sitting jaguar, between Strs. Q-159 and Q-155.

l: Fragment of human torso lying on Str. Q-84.

m,*n*: Fragments of statue from terrace of Str. Q-127a.

o-*v*: "Column altars" with round tops. *o*, at base of north stairway of Castillo; *p*, near shrine Q-157a; *q*, in niche of shrine H-18; r, in front of Caracol, Q-152; *s*, west of Str. Q-83; *t*, *in situ* in front of Str. Q-142; *u*, on terrace of Str. Q-148; *v*, on ground near Str. Q-89.

w: Typical "sacrificial altar," at southwest corner of Str. Q-141.

x: Badly eroded monument found on Str. H-15. Sculpture seems to represent jaguar.

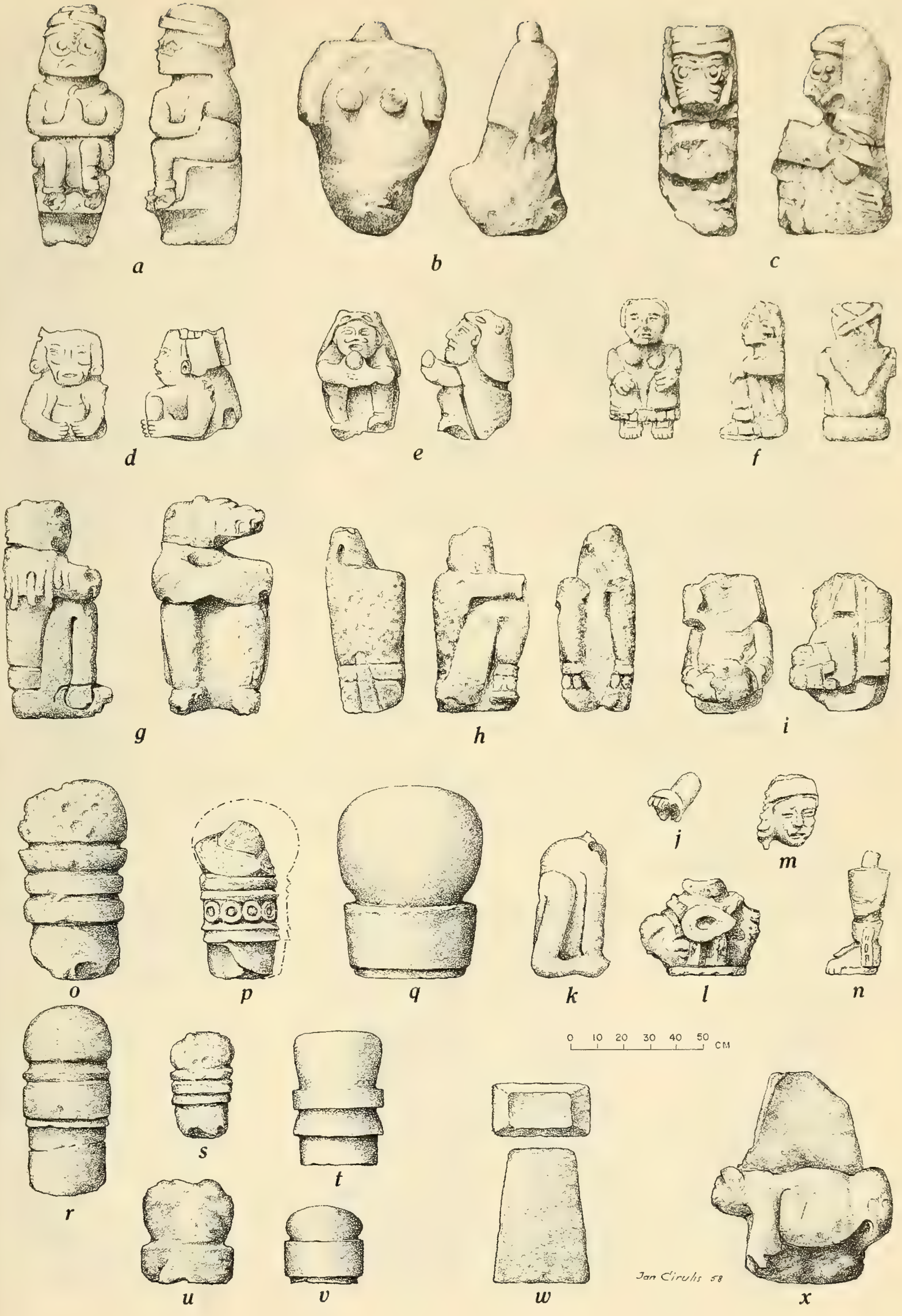
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FIGURE 11

a: Monument from Group Z-8. Horizontal section rectangular with rounded corners.

b,*c*: Two panels representing a male and a female monkey, from Str. Z-8b.

d: Sculptured form from Group Z-8.

e: Sculptured stone near Str. Q-84. On top is round depression about 22 cm in diameter and 5 cm deep, similar to that on monument *f*.

f: Large monument on Str. Q-84. Round depression on top similar to that described for *e*. Remains of plaster on surface.

g: Tapering top of stela (?) on Str. Q-84.

h: Unidentified form on Str. Q-84.

i: Squatting zoomorphic figure (jaguar?) from house group in Section Z.

j: Stela 7, found on terrace of the Caracol, Str. Q-152.

k: Stela 8, from terrace of the Caracol, Str. Q-152. This may be fragment of lintel.

l: Stela 14. Sculptured idol or stela found near east round building, Str. Q-126.

m: Glyphic panel from Str. Q-172.

n: Glyphic panel from Group R-95 to R-99.

o: Sculptured column from Str. Q-113a.

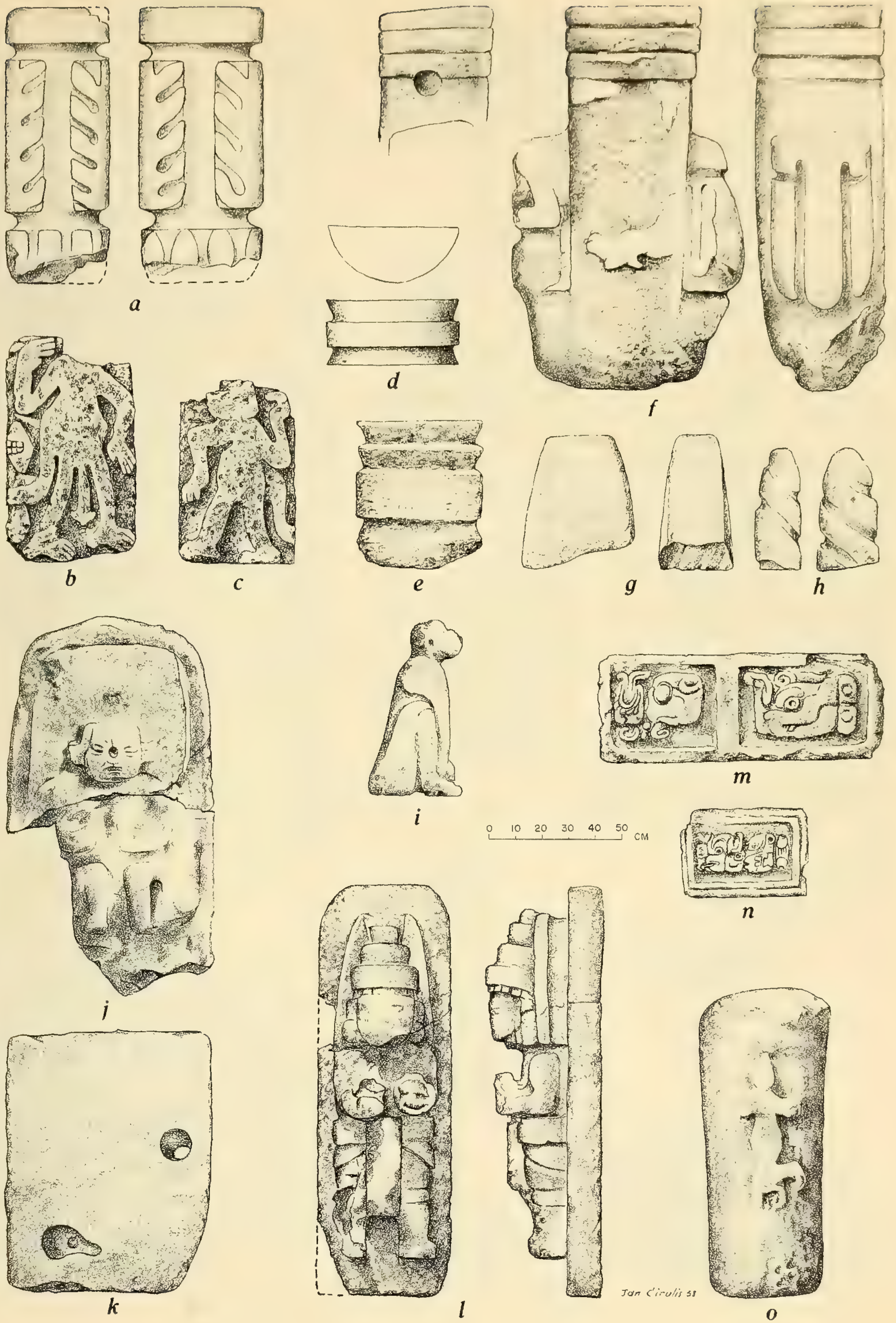
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FIGURE 12. Paneled stelae.

a: Stela 1, at Hacienda Xcanchakan.

b: Stela 10; possibly part of Stela 4.

c: Stela 4, near Str. Q-84.

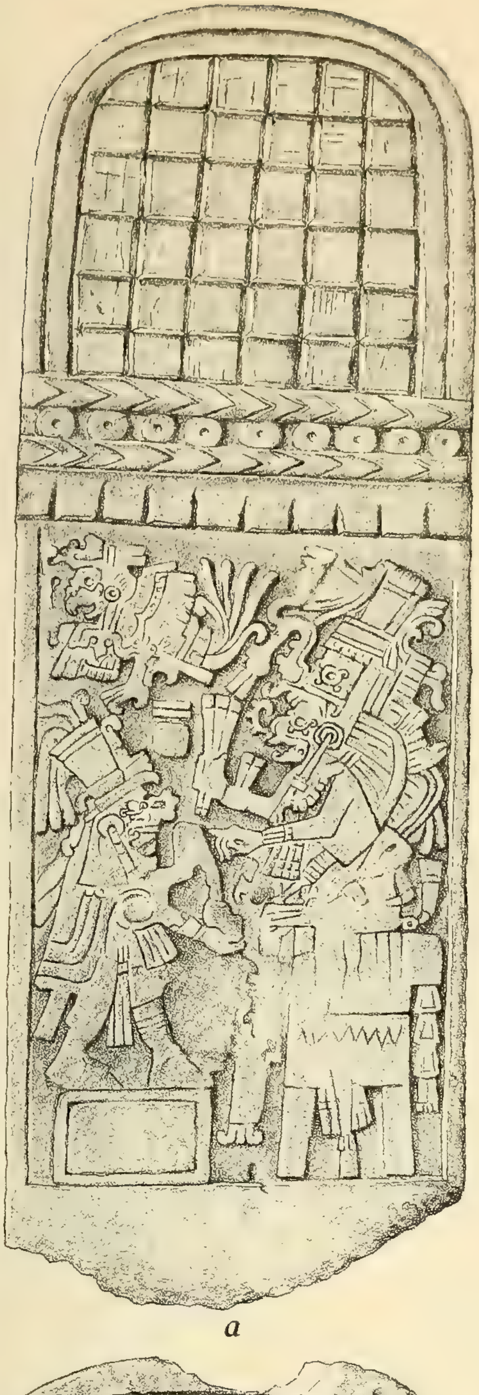
d: Stela 9, near Str. Q-126.

e: Stela 2, in front of Str. Q-81, near Str. Q-84.

f: Stela 3, near Str. Q-84.

g: Stela 6, on Caracol terrace, Str. Q-152.

h: Stela 5, on Caracol terrace, Str. Q-152.



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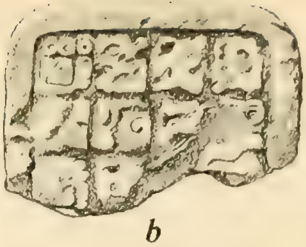

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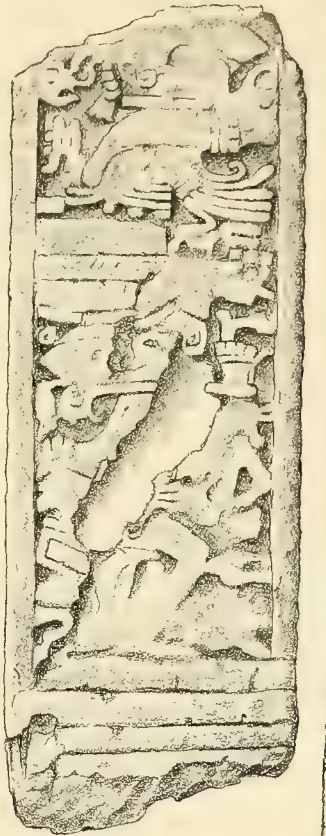

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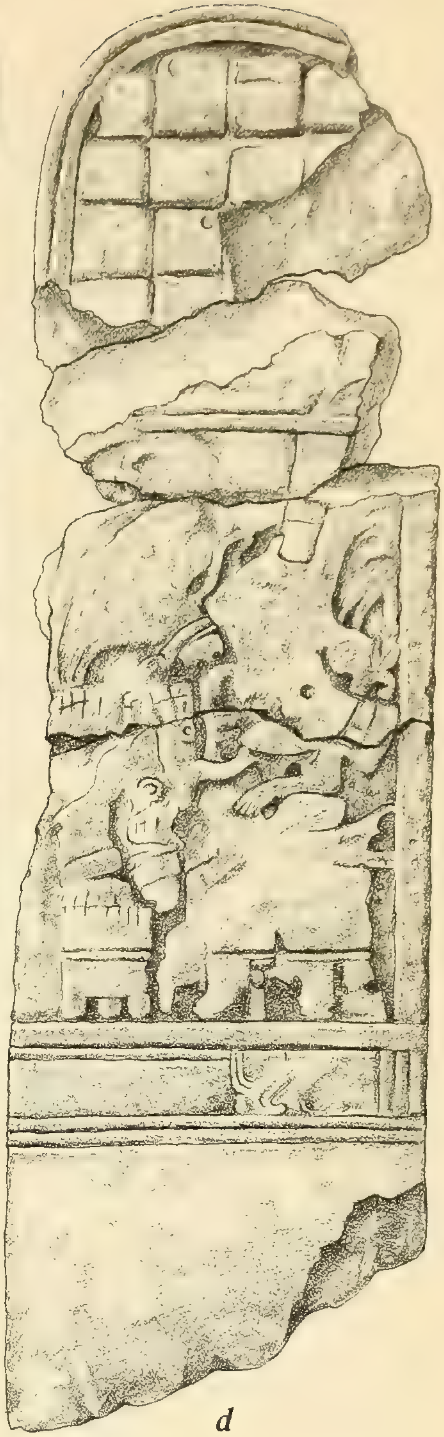

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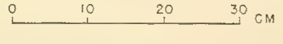

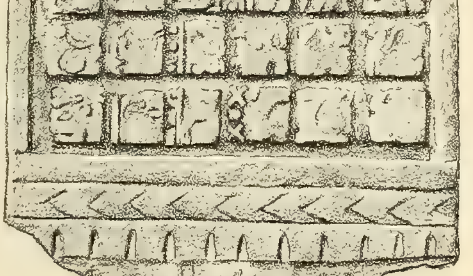

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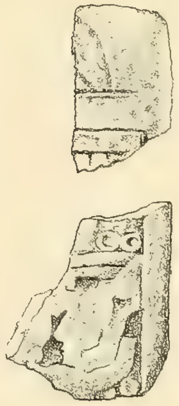

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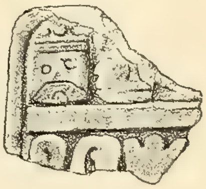

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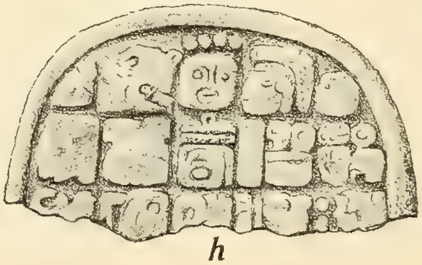

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PART 3

RESIDENTIAL AND ASSOCIATED STRUCTURES AT MAYAPAN

A. Ledyard Smith

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23. Burials, burial vaults, and entrances to vaults.

MAP OF THE RUINS OF MAYAPAN

(in back cover pocket)

INTRODUCTION

A great deal of archaeological work has been carried on in the Maya area since Stephens and Catherwood made their two memorable journeys in Central America—journeys the results of which when published, with Stephens' straightforward description and Catherwood's accurate drawings, undoubtedly did more to bring the importance and magnificence of the many ruins they visited to the attention of the public than anything had up to this time (Stephens, 1841 and 1843).

By far the lion's share of the efforts of expeditions in the Maya area, however, has been devoted to the spectacular religious and civic buildings of the sites investigated. With few exceptions, the study of the manner of living of the great majority of the Mayas was sadly neglected up to the last few years, and little was known of their domestic architecture or settlement patterns.

When Carnegie Institution of Washington decided to carry on extensive work at the walled city of Mayapan, the first task undertaken was the mapping of the site by M. R. Jones. His map, which was the result of work in the field from November 1949 to June 1950 and from November 1950 to February 1951, was first issued in 1951 (Jones, 1952). In making the map particular care was taken to indicate all building remains, no matter how small. The results show that there is a greater concentration of structures here than in any comparable area (see map in back cover pocket), and that the vast majority of them are of the secular type, dwellings and associated constructions. H. E. D. Pollock, Director of the Department of Archaeology of Carnegie Institution of Washington, was quick to see the importance of this situation. His remarks on the subject in two annual reports follow:

"It has been felt for some time that one of the most promising areas of study at Mayapan is the domestic economy, the way of life, of its ancient inhabitants. At no other Maya site has there been observed such a wealth of remains of simple dwellings. It is natural to believe that other large Maya cities had sizable populations, presumably living in proximity to the ceremonial centers, but the urban character of Mayapan, its population crowded into the area surrounded by the great city wall, and the relatively good state of preservation of the houses make this site particularly suitable for such study." (Pollock, 1953, p. 249.) "Early in the course of our work at Mayapan it was realized that one of the outstanding opportunities offered at the site was a study of the remains of houses, for the most part presumably the dwellings of ordinary people, a side of Maya archaeology that had been sadly neglected." (Pollock, 1954, p. 263.)

It is the purpose of this report to bring together and summarize all the information acquired from the investigation by Carnegie Institution of Washington of residential and associated structures during its five-year program at the ruins of Mayapan (Year Books, 1951-1955).

Up to the time of publication of the Jones map of Mayapan in 1951, little attention had been paid in the Maya area to secular structures. Although a few writers, as Wauchope (1940, p. 232) points out, believed in the importance of the study of such remains (E. H. Thompson, 1886, pp. 252-253; J. E. S. Thompson, 1931, p. 336; Tozzer, 1934, p. 12), the subject was entirely ignored by most of the early students of the Maya. It is true that a great many mounds had been dug into and trenched through, but unfortunately the findings were for the most part poorly recorded. In his essay for The Maya and Their Neighbors, Pollock (1940, p. 197) emphasizes the necessity of knowing something of the composition and arrangement of rural and urban populations in order to appreciate the character and significance of ceremonial centers. Besides the mounds he describes in his excavations at Baking Pot, O. G. Ricketson (1929) was one of the first to plan a survey and study of house mounds. He had this done at Uaxactun in order to estimate the population of the site (A. L. Smith, 1929; O. G. and E. B. Ricketson, 1937, pp. 15-24, fig. 2). Here 78 house mounds were located in the nonswampy areas surrounding the ceremonial groups. In 1932, Wauchope, who has showed more interest than most in the dwelling-type structures of the Maya, excavated 5 house mounds at Uaxactun (Wauchope, 1934). Since then he has carried on investigations of house mounds at Chichen Itza and Zacualpa (1936; 1938, Appendix A; 1948) and written an article on domestic architecture (1940). The author, in 1936, uncovered three house platforms under the so-called Palace, Str. A-V, at Uaxactun (A. L. Smith, 1936; 1950, pp. 71-72) and later during his survey of the Guatemala highlands reported house platforms associated with ceremonial centers (1955, p. 72). At Chuitinamit, in the Department of Baja Verapaz, he says that there were at least 400 platforms that probably supported small houses built of perishable materials. He suggests that these were only used during periods of religious festival, when the whole populace moved up from the valleys to participate (A. L. Smith, 1955, p. 49 and frontispiece). A. C. and A. P. Maudslay, in A Glimpse at Guatemala (1899, p. 102), mention these same platforms.

Quite a few writers have recorded information about house mounds or platforms in various parts of the Maya area, but such information is usually meager. As early as 1892, E. H. Thompson (1893, pp. 262-64) showed interest in the common dwellings of the ancient Maya around the ruins of Labna in Yucatan. Some twenty years later, E. L. Hewett (1912, pp. 242-43) described house platforms near Quirigua, Guatemala. T. Gann dug and described many house mounds in British Honduras and southern Yucatan (Gann, 1918, p. 53), and he says that there is little doubt that some of the flat-topped mounds at Pusilha, British Honduras, were merely substructures for the support of wooden houses (Joyce, Gann, Gruning, and Long, 1928, pp. 341-42). During his archaeological investigations in the Corozal district of British Honduras, Gann uncovered remains of houses that had been covered by a mound. The houses had low walls, not more than 4 feet high, rounded and covered with stucco on top. This would indicate that the upper part of the walls had been of wood and the roof thatch (T. and M. Gann, 1934, p. 31). J. E. S. Thompson (1931, pp. 237, 244-48) mentions house mounds in the southern Cayo district of British Honduras, and in two publications on the civilization of the Maya he discusses the houses of the common people as well as those of the nobles (J. E. S. Thompson, 1927, 1954). S. K. Lothrop, in his book about the ruins of Tulum, on the east coast of the territory of Quintana Roo, describes the main street and the houses along it and gives good plans of several of them (Lothrop, 1924, p. 67, figs. 77, 90, 95, and 104); in his report on his work at Lake Atitlan in the highlands of Guatemala he mentions house mounds at several of the sites investigated and gives a plan of an ancient house at Chukumuk (Lothrop, 1933, fig. 3). A. V. Kidder, whose early field work had been in the southwest United States, where house types are so important, took an interest in the possibilities of a study of house mounds in the Maya area. According to Wauchope, it was this interest of Kidder's that led to the intensive investigations of house mounds carried on by him at Uaxactun, Chichen Itza, and Zacualpa (Wauchope, 1940, p. 232). In 1935, Kidder made a reconnaissance excavation at the ruins of San Augustine Acasaguastlan, Department of Progreso, Guatemala. Here he excavated a mound which he believed might have supported a dwelling (Kidder, 1935, pp. 118-19, fig. 8).

C. L. Lundell, while working in the savanna country of the Department of Peten, Guatemala, discovered some ruins 7 km south of La Libertad that he named Chakantun. In his description of this site he says: "The remains consist chiefly of stone foundations and floors of round and rectangular structures. The majority of the structures were doubtless of the thatch, pole and stucco type similar to those found in the Maya area today." (Lundell, 1934, p. 175.) In his Archaeology of Southwestern Campeche, E. W. Andrews (1943, pp. 72-74) discusses thatch-roof structures with masonry walls. He found these houses to be square cornered as well as round ended.

E. M. Shook and R. E. Smith, during their investigation of the ruins in the vicinity of Poptun in the southeast part of the Department of Peten, Guatemala, reported numerous house mounds and house sites. They believed that the area had a great deal of interest for the study of the lives of the common people (Shook and Smith, 1950). Shook (1955, p. 293) also mentions house platforms on the island sites of Jaina and Isla de Piedra off the west coast of the peninsula of Yucatan between Campeche and Sisal. W. T. Sanders, who made a ceramic survey of the east coast of Yucatan for Carnegie Institution during the 1953-54 and 1954-55 field seasons, mentions domiciliary structures at Vista Alegre, Aguada Grande, Xelha, and Cancun, visited on his first trip (Sanders, 1955), and at Tancah and Tulum on his second trip (Sanders, 1955a, p. 288).

In the last few years quite an interest has been taken in pre-Columbian settlement patterns and population studies in the Maya area, and papers have been published on the subject by F. Termer (1951), G. R. Willey (1956), S. F. de Borhegyi (1956, 1956a), and E. M. Shook and T. Proskouriakoff (1956). Willey, who spent some time in Peru studying the settlement patterns in the Viru Valley, has shown a great deal of interest in the subject; from 1953 to 1956 he carried on a survey of prehistory settlements in the Belize Valley (Willey, 1953, 1956a, 1956b; Willey and Bullard, 1956; Willey, Bullard, and Glass, 1955). Bullard, who was with Willey during his work in the Belize Valley, has recently returned from an investigation of house sites in the Department of Peten, Guatemala, having spent from January through June of 1958 in the area. He told the author that while on this trip he visited Maler's ruins of Topoxte on the main island of Lake Yaxha (Maler, 1908, pp. 55-60). Here he found about 80 house mounds, close together, and surrounding the ceremonial group, which rests on a hill. Some of these house mounds were on two wide, long, curving terraces conforming to the terrain. He also found house mounds on the two small islands close to the main island. Topoxte is a late site, possibly contemporaneous with Mayapan. He said no details of the house mounds could be obtained without excavation. Neither Maler nor Lundell, who visited the site many years later, mentions these house mounds (Lundell, 1934, pp. 182-85, fig. 4). G. W. Brainerd in his book on Maya civilization discusses settlement patterns (Brainerd, 1954, pp. 70-71, 86-87).

Of all those who have written about secular buildings, no one else has gathered together so much information as A. M. Tozzer, in his translation of Landa's *Relación de las cosas de Yucatán* (1941) and his book entitled *Chichen Itza and Its Cenote of Sacrifice* (1957). The notes in his Landa translation contain innumerable references to the subject. One look at the range of information under *Houses* and *Worship in houses* in the syllabus (Tozzer, 1941, pp. 287 and 306) is enough to give an idea of how deeply he studied the subject.

As was mentioned above, Jones' map of Mayapan gives evidence of the importance of dwellings at the site and provides the opportunity to study them and the associated structures. It includes all the 4000 or more structures within the city wall as well as those lying within about 75 m outside the wall (see map in back cover pocket). It shows that Mayapan has a very different plan from that of other Maya ruins and is the closest approach to complete urbanization so far discovered. Here, as was mentioned before, the concentration of buildings is greater than in any other area of equal size, and at least half of the buildings were definitely used as dwellings. Most of the 2000 remaining structures are small buildings associated with the dwellings, which for the most part are in small groups surrounded by boundary or property walls. The ceremonial buildings are with few exceptions found in one large group of about 100 structures in Square Q, roughly the center of the site, and four small groups, one of 11 structures in Square H, associated with the Cenote Itzmal Ch'en, one of 4 in Square T, associated with Cenote X-Coton, 4 buildings in Square E, Strs. E-9 to E-13, and 3 in Square J, Strs. J-109 to J-111. These civic and religious constructions comprise about 3.5 per cent of the total number of structures at Mayapan. To put it in another way, the ceremonial buildings, excluding, of course, the oratories associated with house groups, and group altars, and group shrines, occupy only about 64,000 sq m out of 4.2 sq km, or 1.52 per cent of the area within the city wall—a very small percentage indeed.

During the five field seasons at Mayapan, the late Karl Ruppert and the author spent practically their entire time making plans of all dwellings and their associated structures as well as plans of the groups formed by these buildings. Fortunately, the majority of the structures were so exposed that quite accurate measurements could be taken and buildings drawn to scale without excavation. Excavation of some individual houses and house groups, nevertheless, was needed. Such work was carried on at Mayapan by the following: J. E. S. Thompson (1954b), Proskouriakoff and Temple (1955), D. E. Thompson and J. E. S. Thompson (1955), Chowning and D. E. Thompson (1956), Pollock (1956), and Ruppert and the author (Ruppert and A. L. Smith, 1952, 1954; A. L. Smith and Ruppert, 1953, 1956). An important contribution to our knowledge of house groups was made by Bullard's two years of work investigating boundary walls at Mayapan (Bullard, 1952, 1954).

In February of 1951, Ruppert and the author started an above-ground survey of the building remains at Mayapan. Jones' excellent map of the site, completed in February 1951, was an invaluable aid in this work. Owing to the great number of structures at Mayapan, the first field season's work was limited to surface examination of as many structures as possible (Ruppert and A. L. Smith, 1951). While this work was in progress it became apparent that in order to have a clear picture of the various types of structures encountered it would be necessary to do some excavating. The buildings that seemed most likely to give the desired information were recorded for excavation in the future, and places that looked as if they might contain caches or burials were noted. The data for each construction were recorded on 5-by-8-inch cards, and, for most, scale drawings were possible. Most of the dwelling-type buildings and their associated structures were found to be in small groups. Scale drawings of these groups were also put on 5-by-8-inch cards. These card files of individual buildings as well as of groups are now in the possession of Peabody Museum, Harvard University.

Jones had divided his map into 500-m squares, each designated by a capital letter, but no structures had been numbered. To help identify individual structures, it was decided to give them the letter of the square in which they occurred plus a number: e.g., Str. A-1, Str. B-3, Str. T-5. The structures are numbered consecutively in each square. Structures in groups carry the same number but are differentiated by the addition of a lower-case letter (e.g., Strs. B-36a, B-36b, and B-36c are three structures in Group B-36). Civic and religious buildings normally carry numbers without a terminal letter: e.g., Str. G-152. This rule has several exceptions, a few groups of dwellings being shown with structures numbered separately (e.g., Group R-85 to R-90), and some religious and civic structures carrying terminal letters. The exceptions are due either to the discovery of additional buildings after the numbering had been completed or to a change in conception of function of structures after excavation. Ruppert and the author did not finish numbering the structures until 1954, and it was not until the end of the 1955 field season that all information was available so that the revised edition of the map of Mayapan, printed in 1957, could be made. (See back cover pocket. For a complete description of changes made in the revised edition of the map, see Pollock, 1957, pp. 657-59.)

During the 1952 field season, Ruppert and the author continued their surface examination of the ruins of Mayapan. This year 1165 buildings were recorded, which, with the 1143 examined in 1951, left about one-third of the site still to be investigated. Although most of the season was devoted to ground survey, several weeks were spent in excavating below floors and in benches of house platforms and associated terraces for caches, burials, and pottery samples (A. L. Smith and Ruppert, 1952). It was during this season that Bullard started his study of the numerous rough stone walls that occur throughout the ruins. His findings indicated that the walls were to be found in residential but not in public areas and that they probably formed the boundaries of house lots or family groups (Bullard, 1952, 1952a).

As in the 1952 field season, Ruppert and the author were occupied most of the 1953 season with the continuation of their surface examination of the ruins. This year 1019 buildings were inspected, which,with the 2308 structures examined during the two previous field seasons, left only about one-sixth of the site still to be examined. In addition to their work on the survey, Ruppert and the author carried on excavations in three of the larger houses and in a shrine near the center of the court before one of the excavated houses. Near the end of the season they spent several weeks at the Puuc sites of Uxmal, Kabah, and Sayil investigating house-type structures to see how they compared with those at Mayapan (Ruppert and A. L. Smith, 1953). Bullard spent most of the 1953 season continuing the study of the property-wall system at Mayapan, and complete plots were made of the walls in Squares H, I, and Q. He also looked into problems of settlement pattern on the outskirts of Mayapan. Early in the season he visited Chichen Itza for several days, and in May he made a trip to Uxmal, Kabah, and Sayil, the purpose being to look for possible property walls. At Chichen Itza he found inconclusive evidence, and at the three Puuc sites property walls were clearly not a feature of houses or house groups (Bullard, 1953, 1954).

The 1954 field season saw the completion of the surface survey and the numbering of all structures within and adjacent to the great wall of the city. During the season 813 structures were inspected, making a total of 4140 examined and recorded since the beginning of the survey. Of these all but about 125 lie within the city wall, an area of 4.2 sq km. Since the 1954 field season, a few additional structures have been added; they appear on the revised map. It should be understood that the total number of structures quoted as being at the site, or the number of buildings that have been said to be dwellings or to have served other purposes, although probably fairly accurate, can only be approximate figures. The reason is not only that functions of buildings may have been misinterpreted but also that many remains are in such a poor state of preservation that they cannot be placed in any definite category and many others have probably completely disappeared. During the two previous field seasons and the 1954 season, the presence of Puuc-type stones in buildings and the location and measurements of metates were recorded on the cards of the buildings with which which they were associated.

Besides completing the survey, Ruppert and the author spent several days excavating a small group of mounds surrounded by a property wall in Square A. This group is about 250 m outside the city wall. They also completely excavated Str. Q-62, a good example of an average dwelling, and carried on other excavations in various structures in Squares Z and AA, where the possibility of finding burials was indicated by depressions or where part of a burial vault was showing (A. L. Smith and Ruppert, 1954). Near the end of the season they spent 11 days at Chichen Itza exploring that site for house types. A large part of the mapped area was covered, and 43 houses were found in good enough condition to yield plans (Ruppert, Shook, A. L. Smith, and R. E. Smith, 1954, p. 286).

Other work in dwellings was carried on in 1954 by J. E. S. Thompson and Strömsvik. The former excavated several residential-type structures in Square Q, one of which was apparently of an important person (J. E. S. Thompson, 1954a); the latter, at the end of the season, reconstructed Str. Q-62, a typical example of simple living quarters (Strömsvik, 1954, p. 282). Outside Mayapan, R. E. Smith investigated the ruins of Santa Cruz situated about 1.5 km southeast of Cenote Ch'en Carro, which is in the south-central part of Square Y, Mayapan. Here he found a platform supporting several house platforms, two of which were examined (R. E. Smith, 1954).

Having completed the square-by-square surface examination of the building remains at Mayapan the previous season, Ruppert and the author spent all but two weeks of the 1955 season excavating dwellings and associated structures. They completely excavated several house groups and a number of individual buildings. The purpose of this work was to try to get sealed samples of pottery in order to see whether some of the constructions might prove to be of an earlier period than others, and to determine the possible functions of the structures investigated. In the selection of buildings for examination, some of the more elaborate dwellings were chosen as well as structures with unusual ground plans. In all, 26 constructions were examined. In addition to working at Mayapan, Ruppert and the author spent a week at the ruins of Chacchob investigating house mounds, and another week checking a survey of house types lying within a distance of about 20 km of Mayapan. The latter survey, which had been carried on throughout the season by two or three native laborers, was for the purpose of finding out how far the types found at Mayapan extended outside the site (Ruppert and A. L. Smith, 1955).

Besides the work of Ruppert and Smith, considerable excavation was carried on by others during the 1955 season at Mayapan. Proskouriakoff and Temple (1955a) partly excavated one of the most imposing assemblages of buildings at Mayapan, Group R-85 to R-90. The preliminary mapping and excavation of this group were started in the 1954 field season, at which time it was established that it was an unusually elaborate residence (Proskouriakoff, 1954, pp. 270-71). J. E. S. Thompson and D. E. Thompson (1955) excavated another imposing residential group in Square Q, the group formed by Strs. Q-169 to Q-173. It is southwest of, and quite close to, the Castillo, closer than one would expect a residential group would be to the heart of the ceremonial center. D. E. Thompson (1955) also excavated Str. Q-165, which seems to have served as a shrine as well as a kitchen, possibly for the residence Q-168, or for the ritual preparation of food for a near-by colonnaded hall, Str. Q-164. Near the end of the season, A. Chowning (1955) excavated three connected house mounds, Strs. Q-166, -167, and -168, that seem to belong to an assemblage which also contains the colonnaded hall Q-164 and Str. Q-165. Chowning suggests that Strs. Q-166 and Q-167 may have been kitchens. A very interesting group the function of which presented a problem was investigated by Pollock. In this relatively large assemblage, Group Z-50, he undertook limited excavations. The group is composed of buildings that suggest that their function was ceremonial, but they are different enough from known types to leave considerable doubt. Pollock considers that possibly Group Z-50, which lies at the southern end of a sacbe, a large residential group lying at the northern end, is essentially ceremonial in nature but involved rituals that required residence during certain periods and that it may have been restricted to the occupants of the group at the other end of the causeway (Pollock, 1955).

All the pottery recovered during the 1951-55 field seasons from individual dwellings, associated structures, or residential groups at Mayapan was turned over to R. E. Smith for examination and study and has received preliminary treatment by him in the Annual Reports of the Department of Archaeology (R. E. Smith, 1952, 1953, 1954, 1955, 1956, 1957). A great deal of this pottery was surface material and came from excavations where intrusion or mixing was possible. A considerable amount, however, was from sealed areas, and it was clear from the beginning that house platforms and their associated structures were all late constructions containing Mayapan period sherds in the fill. R. E. Smith was eventually able to divide the Mayapan period pottery into two phases, early and late. Out of several hundred lots of sherds associated with secular structures only 26 lots were found with no sherds later than early phase, and some of these were under early floors or in near-by pits which could not be connected directly to the buildings in question. Unfortunately, these lots were of no assistance in trying to establish any sequence or architectural differences in dwelling-type structures. As a result of his study of the pottery, R. E. Smith says: ''Effigy-type incense burners were more than twice as abundant in and around ceremonial structures as they were in association with dwellings, whether the dwellings were of elaborate or simple type. The smaller number of incense burners found with house mounds was offset by the increase in Mayapan Red and porous gray wares. Mayapan Red and Black-on-buff pottery, never found in large percentages, was three times as abundant in house mounds as in ceremonial structures. Black-on-cream ware was twice as abundant in ceremonial structures as in the more elaborate dwellings; the ordinary house mound rarely harbored any Black-on-cream sherds. There is still much to be learned from a careful study of the pottery associated with different types of structure, and even of pottery from functionally different rooms within structures.'' (R. E. Smith, 1955, pp. 285-86.) Several times, the pottery found in rooms of dwellings or associated structures has helped to establish their function.

As well as the pottery from Mayapan, all the pottery recovered from the survey of house types within a distance of 20 km of the city, and that brought back from Chacchob and Chichen Itza by Ruppert and the author, were turned over to R. E. Smith for study.

It should be mentioned here that the three plans (fig. 7,c,d,e) of modern house groups and the property walls at the small village of Telchaquillo, 2 km north of Mayapan, are taken from the original plans made by Ruppert, who spent a great deal of his spare time investigating the living conditions and habits of the present-day Indians at Telchaquillo. With few exceptions, the illustrations are from Current Reports, Carnegie Institution of Washington, Department of Archaeology. Some of them have been slightly changed and renumbered or lettered to serve the report. In figures 8, 11, and 14, only those structures are mentioned in the legend that are also shown in some other illustration or that have a detail needing explanation. All the structures in these figures are discussed in the text.

I wish to thank all the members of the staff of Carnegie Institution and others who contributed to our knowledge of secular structures at Mayapan through their investigations and reports, upon which I have drawn so heavily. I am indebted to Avis Tullock for all the drawing and help in arrangement of the illustrations. Finally, I wish to acknowledge my debt to the late Karl Ruppert, with whom I worked for five years at Mayapan on the survey of the site and excavations in many nonceremonial buildings. If it were not for the fact that Ruppert retired in October 1957, he would have been a co-author of this report. Before his retirement he spent most of his time ordering and analyzing the data collected over the years at Mayapan.

1. EARLY SOURCES OF INFORMATION

The early sources of information on secular buildings in the Maya area may be divided into five categories: graffiti, murals, codices, architecture, and early accounts. Although the majority of dwelling-type structures portrayed or described in the sources are not like the typical dwelling at Mayapan as to plan, they have other features in common. They also show the diversity of house types used by the Maya for over a thousand years in pre-Columbian times.

Graffiti

There are a few graffiti that represent dwellings. At Uaxactun, Guatemala, in Str. A-V, the so-called Palace, on the doorjamb of Room 19 are two bush houses, one with a person seated inside (A. L. Smith, 1950, p. 27 and fig. 113,a). Both have sloping thatch roofs, walls or posts, and floors. One house rests on a low platform and has a porch in front. The porch is shown with a post supporting a thatch roof extending from the roof of the main part of the house. At the ruins of Nakum, also in Guatemala, there is the graffito of the cross section of a bush house on a wall of Temple A. The roof of the house is clearly of thatch, and the walls, which are thin and covered with small crosses, are probably made of some kind of vertical and horizontal pole construction. A floor or low foundation platform is shown (Tozzer, 1913, p. 161).

Murals

The frescoes or wall paintings from buildings at Chichen Itza and Tzula in Yucatan, and Uaxactun in Guatemala, show a variety of house types. They are not illustrated here, as they have been reproduced in a number of publications in color and in black and white. But whenever a mural is mentioned, several places where it can be found have been cited.

Two of the frescoes from the Temple of the Warriors at Chichen Itza show houses of the common people (Morris, Charlot, and Morris, 1931, pls. 139 and 159). In plate 139 there are several houses with thatched roofs and two with a flat roof, probably beam-and-mortar construction. All these houses rest on low platforms, and most of them have a porch covered by the roof of the main part of the house (plate 139 may also be found in Wauchope, 1934, fig. 3,a; Morley, 1946, pl. 24; Marquina, 1951, photo 451). More houses of the thatch roof type are found in plate 159 (see also Morris, 1931, opposite p. 188; Wauchope, 1934, fig. 3,b; Marquina, 1951, photo 452; J. E. S. Thompson, 1954, pl. 17,a; Tozzer, 1957, fig. 62). In the frescoes on the walls of the Temple of the Jaguars at Chichen Itza, there are a number of buildings that represent dwellings. The roofs are not so clearly marked as those shown in the frescoes in the Temple of the Warriors, but there is no doubt that they are of thatch. A few of the houses stand on ground that falls off steeply. This probably indicates the large terrace or platform upon which the houses stood. Each house was also supported by a low platform. Sometimes there was a porch or corridor on the same floor and under the same roof as the main part of the house. Reproductions of these houses from the frescoes on the walls of the Temple of the Jaguars may be found in several publications (A. P. Maudslay, 1889-1902, vol. 3, pl. 41; Wauchope, 1934, figs. 2 and 4,a; Morley, 1946, pl. 54; Brainerd, 1954, fig. 22; Ruppert, Thompson, and Proskouriakoff, 1955, fig. 23,b; Tozzer, 1957, fig. 60). There are some houses on the west wall of the Temple of the Jaguars near the bottom of the mural that are more or less dome-shaped and appear to be covered with either plaster or mud, and one with thatch (Spinden, 1913, fig. 136; Totten, 1926, pl. 51; J. E. S. Thompson, 1954, fig. 18,c; Tozzer, 1957, figs. 61 and 682). Tozzer (1930, p. 156) points out that these probably portray a Mexican prototype in contrast to the more typical Maya houses at the top of the painting. The remains of the fresco in the vault of the long southern room of the Monjas at Chichen Itza show a house with a thatch roof (Wauchope, 1934, fig. 4,b; Tozzer, 1957, fig. 684).

In one of the chambers of the principal building at Tzula, E. H. Thompson found a wall fresco with a house much like those in the frescoes at Chichen Itza (E. H. Thompson, 1904, pl. 2; Marquina, 1928, opposite p. 70; Wauchope, 1934, fig. 4,c).

At Uaxactun a wall painting was found in one of the late rooms of Str. B-XIII, an elaborate dwelling-type structure in which the early rooms were vaulted and the later ones had beam-and-mortar roofs. The mural depicts a small building resting on a low platform. This structure, which is undoubtedly the type of dwelling used by very important people, has a beam-and-mortar roof, as did the room it was found in (A. L. Smith, 1950, figs. 45 and 46; Morley, 1946, pl. 50).

Codices

Unfortunately, the Maya codices contain nothing that gives us any information about the houses of the people. The only house shown in these ancient books is the conventionalized glyph sign for house which has a thatch roof.

Although Mexican, the Codex Florentino should be mentioned as it contains drawings of a variety of houses having features that may be compared to similar features in Maya houses (Sahagún, 1905). Sahagún shows houses with beam-and-mortar roofs as well as thatch roofs, with stone walls, and walls made of perishable materials. There are houses here and there throughout the book, but the most concentrated series is shown in vol. IV, libro XI, láms. CXXXII-CXXXIV.

Architecture

Besides the actual remains of the houses of the Maya, there are a number of examples of architectural decoration, executed in stone or stucco on the façades of ceremonial buildings, that appear to portray dwellings. These occur on buildings in Yucatan at Chichen Itza, Uxmal, Labna, and Chacmultun. They usually are in the upper zone of a façade. Like the murals, they have not been shown in the illustrations of this report as they may be seen in various other publications that are mentioned.

At Chichen Itza, the panel on the north exterior wall of the Temple of the Wall Panels has for its central motif a thatched house (Ruppert, 1931, pl. 11,a). A scene in relief on the vault of the Great Ball Court shows several houses, one with a masonry roof, one with a thatch roof, and part of a third with a thatch roof. The part shown in the last is apparently the front room or porch (Marquina, 1951, photo 441). Another representation of a house at Chichen Itza is in the Mercado. It appears as a name glyph above the line of bound prisoners on the dais (Ruppert, 1943, fig. 7).

The Monjas at Uxmal has replicas of small houses resting on the medial moldings above the doorways of the north and south ranges. The walls of the houses are of stone, but the roofs are apparently of thatch. (Waldeck, 1838, pl. 17; Holmes, 1895-97, pl. 9; Spinden, 1913, fig. 153, pl. 16, 3; Wauchope, 1934, fig. 7,a,c,d, and 1938, pls. 14,e, 15,b,e; Proskouriakoff, 1946, pl. 18; Morley, 1946, pls. 46, 57,b; Marquina, 1951, photos 373-376, 378; J. E. S. Thompson, 1954, fig. 8,f.) The Adivino, another building at Uxmal, has niches representing thatch-roofed huts. These occur in the upper façade (Wauchope, 1938, pl. 14,c).

The two representations of stone-walled, thatch-roofed houses on the upper zone of the portal arch at Labna are among the best known. These houses have several interesting features; the stones forming the roofs are so arranged as to appear like overlapping courses of thatch, the doorways are corbeled, and each house rests on a low platform (Mariscal, 1928, p. 42; Wauchope, 1934, fig. 7,b, and 1938, pl. 15,a; Kelemen, 1943, vol. II, pl. 32,a; Marquina, 1951, lám. 230, photo 360; Brainerd, 1954, fig. 8; Proskouriakoff, 1946, pl. 16; J. E. S. Thompson, 1954, pl. 24,a).

At the ruins of Chacmultun, the niches in the upper façade above the doorways of Edifice 1 are made to look like small houses (E. H. Thompson, 1904, pl. 4, 2 and 3; Marquina, 1951, photo 352).

Besides the plans of houses at Mayapan with which this report deals, and the plans of house types at Chichen Itza, Uxmal, Kabah, Sayil, and Chacchob, published in Current Reports (1952-57), there are not many detailed plans of dwellings used by the ancient Maya. In his report on Tulum on the east coast of Quintana Roo, Lothrop (1924, pl. 25; figs. 77, 90, 95, and 104) shows plans of several large edifices which he calls residences of the nobility. These are on Main Street, the fashionable street of the site. A few of them are very similar to some of the more elaborate dwellings at Mayapan. At Chukumuk, on Lake Atitlan, Guatemala, he excavated a house site which he judged, from the pottery found, did not antedate the Spanish Conquest by many centuries (Lothrop, 1933, fig. 3).

In Guatemala, at Uaxactun, the author excavated platforms that supported simple houses as well as elaborate dwellings. Three of the former type were found under Str. A-V, two of which are illustrated (A. L. Smith, 1950, figs. 10, 11,a, 58,b,c,d). These houses are apsidal in shape; one has a step at one end, and the other has a low rectangular porch projecting from the main platform. The porch is on the long side or front of the apsidal platform which supported the house proper. Small indentations in the plastered floor, where the poles forming the walls rested, indicate that the house had a front, back, and end room. A circular stone foundation with a small rectangular attached platform was excavated at Barton Ramie (Willey, Bullard, and Glass, 1955, fig. 5). This construction dates from about A.D. 300.

The more elaborate dwellings at Uaxactun are what we called palaces (A. L. Smith, 1950, figs. 4, 5, 66-81, 83-86, 91-95, 97, 106,b). They vary greatly in size and plan and may be several stories high. The normal arrangement is two parallel rooms with transverse rooms across the ends. Sometimes these buildings are grouped around courts as in Str. A-V. Palace-type buildings are found in many ruins throughout the Maya area and are mentioned here only because they have been considered to be partly residential in function. Where grouped around a court, as in Str. A-V at Uaxactun, they do have a slight resemblance to, and may have served to some extent the same function as, the most elaborate groups at Mayapan.

Wauchope excavated and illustrates a number of house mounds at Uaxactun. These are later than the apsidal house platforms mentioned above and are rectangular in shape (Wauchope, 1934, figs. 9, 11, 14, 16, 18, 20; 1938, figs. 4,b,d, 5,a,c,e; 1940, fig. 19,b,d,f,h). He also examined 13 house sites at Chichen Itza, some of which he says suggest certain house features that conform to Landa's account of ancient houses (Wauchope, 1938, figs. 3,e, 51, 52). All the houses examined by Wauchope at Chichen Itza were square-ended.

In the winter of 1939-40, Andrews investigated southwestern Campeche. In the report of his findings he discusses thatch-roof structures with masonry walls encountered at Isla Cilvituk and Las Ruinas. At the former site he found all the buildings to be square-cornered, whereas at the latter site there were apsidal as well as rectangular houses (Andrews, 1943, figs. 5 and 9). He points out that the Isla Cilvituk remains resemble the house fragments excavated by Gann at Santa

Rita in British Honduras (Gann, 1918, fig. 28; Andrews, 1943, fig. 14,b). Gann also gives a sketch plan of the fragmentary remains of a house he found in a mound near Nohmul, in the Corozal district of British Honduras (T. and M. Gann, 1938, fig. 6).

Early Accounts

There is no doubt that Diego de Landa's Relación de las cosas de Yucatán, written about 1566 and discovered by Brasseur de Bourbourg and first published by him in Madrid in 1864, is the most important single source of information on the ancient Maya of Yucatan. It contains much about secular structures, their construction, and their uses.

The Relaciones de Yucatán, volumes 11 and 13 of the Colección de Documentos Inéditos (1898-1900), sixteenth-century Spanish records, offer an abundance of information about life in Yucatan. Question XXXI, in the famous Questionnaire of 1577 issued by King Philip II of Spain, asks for those in charge of the various towns throughout the king's New World possessions to "Describe the form and construction of their houses and the materials for building them that are found in the towns or the other places from which they are brought." (Nuttall's translation, 1926, p. 79; Relaciones de Yucatán, vol. 11, p. 32.) A great deal of data came out of the answers to these questions from the various towns, although many of them are very similar.

Much can be learned from these early writings about the construction and function of buildings and about their assemblage. In addition to the quotations from the above, I have added two from the eighteenth-century writer Clavigero. As these early sources will be referred to throughout this report I will quote various passages from them here in order to facilitate their use. Each quotation will carry a number so that it may easily be found when referred to in the text.

The following quotations are from Landa's Relación de las cosas de Yucatán.

About the founding of Mayapan and how the city was arranged

1. "This Kukulcan established another city after arranging with the native lords of the country that he and they should live there and that all their affairs and business should be brought there; and for this purpose they chose a very good situation, eight leagues further in the interior than Merida is now, and fifteen or sixteen leagues from the sea. They surrounded it with a very broad stone wall, laid dry, of about an eighth of a league, leaving in it only two narrow gates. The wall was not very high and in the centre of this enclosure they built their temples, naming the largest, which is like that of Chichen Itza, the name Kukulcan, and they built another building of a round form, with four doors, entirely different from all the others in that land; as well as a great number of others round about joined together. In this enclosure they built houses for the lords only, dividing all the land among them, giving towns to each one, according to the antiquity of his lineage and his personal value. And Kukulcan gave a name to the city—not his own as the Ah Itzas had done in Chichen Itza, which means the well of the Ah Itzas, but he called it Mayapan, which means 'the standard of the Maya,' because they call the language of the country Maya, and the Indians (say) 'Ichpa,' which means 'within the enclosures.'" (Tozzer, 1941, pp. 23-26.)

About the nobles ordering the building of houses other than those of the lords

2. "This being done, since within the enclosure there were only temples and houses for the lords and high priests, they ordered that other houses should be constructed outside, where each one of them could keep some servants, and to which the people from their towns could repair when they came to the city on business. Each one thus established in these houses his majordomo, who

bore for his badge of office a short and thick stick, and they called him Caluac. He kept account with the towns and with those who ruled them; and to them was sent notice of what was needed in the house of their lord, such as birds, maize, honey, salt, fish, game, cloth and other things, and the Caluac always went to the house of his lord, in order to see what was wanted and provided it immediately, since his house was, as it were, the office of his lord.'' (Tozzer, 1941, p. 26.)

Concerning a hurricane, its destruction, and those who escaped

3. ''This wind overthrew all the large trees, causing a great destruction of every kind of game; and it destroyed also all the tall houses which, since they were covered with straw and contained fire on account of the cold, were set on fire, and they burned up a large part of the people. If any escaped, they were crippled by the blows which they received from the (flying) wood. This hurricane lasted till next day noon, and it was found that those had escaped who dwelt in the small houses and the newly married couples, who, in that land, are accustomed to build cabins opposite the houses of their fathers or their fathers-in-law, where they live during the first years.'' (Tozzer, 1941, pp. 40 and 41.)

About the arrangement of the religious and secular buildings in towns

4. ''Their dwelling place was as follows: – in the middle of the town were their temples with beautiful plazas, and all around the temples stood the houses of the lords and priests, and then (those of) the most important people. Then came the houses of the richest and of those who were held in the highest estimation nearest to these, and at the outskirts of the town were the houses of the lower class. And the wells, if there were but few of them, were near the houses of the lords.'' (Tozzer, 1941, pp. 62-64.)

About how they built their houses

5. ''The way they built their houses was to cover them with straw which they have of very good quality and in great abundance, or with palm leaves, which is very well fitted for this, and they have very steep slopes, so that the rain water may not penetrate. And then they build a wall in the middle, dividing the house lengthwise leaving several doors in the wall into the half which they call the back of the house, where they have their beds; and the other half they whitened very nicely with lime. And the lords have their walls painted with great elegance; and this half is for the reception and lodging of their guests. And this room has no doors, but is open the whole length of the house; and the slope of the roof comes down very low in front on account of their love of [Gates' translation gives 'as a protection against'] sun and rain. And they say this is also for another object, to control their enemies from within in time of need. The common people build at their own expense the houses of the lords; and as (the houses) had no doors, they considered it a grave crime to do harm to the houses of others. They had a little door in the rear for the necessary service, and they have beds of small rods and on top a basket-work sevillo mat on which they sleep, covering themselves with their mantas of cotton. In summer time they usually sleep in the whitened part of the house, on one of those mats, especially the men.'' (Tozzer, 1941, pp. 85-87 and note 361.)

6. ''. . . wherever they settled they always built anew their temples, sanctuaries and houses for their lords, according to their custom, and they have always used for themselves wooden houses covered with thatch; or again, it may be that the great abundance of stone and lime and of white earth, excellent for building, which there is in this country, has given them an opportunity

of erecting so many buildings, that except to those who have seen them, it will seem to be jesting to tell about them." (Tozzer, 1941, p. 171.)

About oratories

7. "They had a very great number of idols and of temples, which were magnificent in their own fashion. And besides the community temples, the lords, priests and the leading men had also oratories and idols in their houses, where they made their prayers and offerings in private." (Tozzer, 1941, p. 108.)

About houses built for idols

8. "One of the things, which these miserable people regarded as most difficult and arduous, was to make idols of wood, which they called making gods. . . . While they were fasting, the man to whom the idols belonged went in person or else sent someone to the forest for wood for them, but this was always cedar. When the wood arrived, they built a hut of straw, fenced in, where they put the wood and a great urn in which to place the idols and to keep them there under cover, while they were making them. . . . According to what they said they set about making their gods with great fear. When the idols were finished and perfected, the owner of them made the best present he could of birds, game and their money, in payment of the work of those who had made them; and they took them from the little house and placed them in another arbour, built for this purpose in the yard." (Tozzer, 1941, p. 160.)

About houses for young men

9. ". . . the boys of marriageable age did not associate except to a very slight extent with the married people. On which account they were accustomed to have in each town a large house, whitened with lime, open on all sides, where the young men came together for their amusements. They played ball and a kind of game of beans, like dice, as well as many others. Almost always they all slept together here also until they married." (Tozzer, 1941, p. 124.)

About burying the dead

10. "They buried them inside or in the rear of their houses, casting into the grave with them some of their idols, and if he was a priest some of his books. And if he was a sorcerer, they buried with him some of his stones for witchcraft and instruments of his profession. Usually they abandoned the house and left it deserted after burials, except when there were a great many persons in it, so that they, with their society, lost some of the fear which remained after death. As for the nobles and persons of high esteem, they burned their bodies and placed their ashes in great urns, and they built temples above them." (Tozzer, 1941, p. 130.)

The quotations from Relaciones de Yucatán that follow are taken from notes in Tozzer's translation of Landa (Tozzer, 1941).

A description of Mayapan

11. "This city conquered all these provinces, for it was very strongly built, walled in like those of our Spain and within the walls there are reckoned to have been more than sixty thousand

dwellings, not counting the environs. And the king who ruled them was called and bore the name Cotecpan which means in our tongue 'man over everyone.'" (Tozzer, 1941, note 131; Relaciones de Yucatán, vol. 11, p. 254.)

About houses and temples and which way they faced, from the Relación de Sotuta

12. "And although the ancient ones made their houses of stone and in some parts very sumptuous and the Indians are friendly (to the idea) of making them, for the greater part, on a height as was evident in the ancient buildings and in some houses which they make today and the houses look toward the east and the north and the south and very seldom or never toward the west and if they had some buildings which looked toward the west they were the temples of idols or oratories." (Tozzer, 1941, note 132; Relaciones de Yucatán, vol. 11, p. 101.)

13. "The door of these houses always faced east" (Tozzer, 1941, note 357; Relaciones de Yucatán, vol. 13, p. 213).

About houses of straw being more healthy than those of stone, from the Relación de Mérida

14. "There were no houses of stone for the Indians because in these they become ill and die and for their method of living and constitution, those of the greatest usefulness are those of straw." (Tozzer, 1941, note 357; Relaciones de Yucatán, vol. 11, p. 50.)

About houses made of wood and straw for health reasons, from Relación de Izamal

15. "Commonly the Indians made their houses of wood and poles and covered with straw and palm leaves of which in some parts there is an abundance, although they might have made them of stone, for there are many in the land. They say that they do it because the houses of straw are more healthful than those of stone because of the heat which lasts from the month of April until September." (Tozzer, 1941, note 357; Relaciones de Yucatán, vol. 11, p. 274.)

Wauchope in his House Mounds of Uaxactun (1934) gives five quotations from the Relaciones, four of which are repeated below. They are answers to Question XXXI of the Questionnaire of 1577. (Wauchope says these questions came from vol. 9 of the Colección de Documentos Inéditos. This is obviously in error, as they are from vol. 11. Also his quotation headed Relación de Izamal y Santa María is the description of the houses of the Relación de los Pueblos de Tetzal y Temax. These errors have been corrected here.)

About the construction of houses

16. Relación de Tecanto y Tepacán: "Usually the Indians make their houses of wood and pointed poles covered with straw and palm leaves, of which there is an abundance in some regions; although they could make them of stone, since there is much in the land, they say that they make them as they do on account of its being healthier to live in houses of straw than (to live in houses of) stone, because of the heat which they have from the month of April to September; in many parts of the province there are many buildings well constructed of lime and stone, and some so curious that the mortar at the juncture of the stones scarcely appears; most of the houses face the east, the north, and the south (medio día), and none faces the west unless they are oratories or temples, some of which do face the west; some today make their houses as the Spanish do – the ancients

also were fond of living high up, as is seen in most of the said ancient houses." (Wauchope, 1934, p. 115; Col. Doc. Inéd., vol. 11, p. 125.)

17. Relación de Hocaba: "The houses which they have in this town and throughout the country are of wood, forked sticks being placed upright and at the top they bind the houses with thick poles tied with vines of which there is a great quantity in the forest, and they keep the form of the houses secure with a roof-crest and cover them with straw, keeping it packed down with poles, and they last four or five years before being renewed, and they help one another in making them, and some caciques have good ones of lime and stone." (Wauchope, 1934, p. 115; Col. Doc. Inéd., vol. 11, p. 92.)

18. Relación de los Pueblos de Tetzal y Temax: "...I say that the houses which they make to live in are of thatch, which are palms, and they bind them with pointed sticks before putting on the thatch, and upon some forked sticks, which they place first to hold up the heavy wooden house, they bind the house in this manner and surround the whole thing with poles and leave in it a door and those who so desire cast away the forked sticks conforming to the house and daub the whole thing over with mud, and in order that the mud may hold together in the walls they mix it with much grass, which they chop up." (Wauchope, 1934, p. 115; Col. Doc. Inéd., vol. 11, pp. 303-304.)

19. Relación de la Villa de Santa: "The houses and temples of this province have roofs of thatch and palm, the buildings below being of wood, which is like marble, and surrounded with heavy reeds, like short lances bound together with some runners or vines with which this country is provided; on this account the houses are in much risk of fire and wind; the wind penetrates and blows through them with much ease, because they leave them open all around like lattices and cannot shut them up nor plaster them because of the great humidity – the natives make these houses like experts ... (as for material) it is brought to it by water, in canoes, from a quarter of a league, from a league, and at the farthest from a league and a half away; a house being well constructed of seasoned materials, lasts twelve or fourteen years, at the end of which time it happens that only the roof is changed or some posts and wall, if by chance there is any need of this, and this lasts twenty years." (Wauchope, 1934, pp. 115-16; Col. Doc. Inéd., vol. 11, p. 370.)

The following two quotations are from Francisco Saverio Clavigero, who wrote his Storia antica del Messico in 1780. He obtained his material from the earliest sources at his disposal and showed a great interest in everything that had to do with the history of the land and the people.

About the houses of the poor

20. "The houses of the poor were built of reeds, or unburned bricks, or stone and mud, and the roofs of a long kind of hay which grows thick, and is common in the fields, particularly in hot countries, or of the leaves of the maguei, or aloe placed in the manner of tiles, to which they bear some resemblance both in thickness and shape. One of the columns or supports of these houses was generally a tree of regular growth, by means of which, besides the pleasure they took in its foliage and shade, they saved themselves some labour and expense. These houses had for the most part but one chamber, where the family and all the animals belonging to it, the fire-place, and furniture were lodged. If the family was not very poor, there were more chambers, an ajauhcalli, or oratory; a temazcalli, or bath; and a little granary." (Clavigero, 1807, vol. 1, pp. 416-17.)

About the houses of the lords

21. "The houses of lords, and people of circumstances, were built of stone and lime; they

consisted of two floors, having halls, large courtyards, and the chambers fitly disposed; the roofs were flat and terraced; the walls were so well whitened, polished, and shining, that they appeared to the Spaniards, when at a distance, to have been silver. The pavement or floor was plaster, perfectly level, plain, and smooth.

''Many of the houses were crowned with battlements and turrets; and their gardens had fish ponds, and the walks of them symmetrically laid out. The large houses of the capital had in general two entrances, the principal one to the street, the other to the canal: they had no wooden doors to their houses, perhaps because they thought their habitations sufficiently secure without them, from the severity of the laws against robbers; but to prevent the inspection of passengers, they covered the entrance with little reeds, from which they suspended a string of cocoas, or piece of broken kitchen utensils, or some other thing fit to awake by its noise the attention of the family, when any person lifted up the reeds to enter the house. No person was permitted to enter without the consent of the owner.'' (Clavigero, 1807, vol. 1, p. 417.)

2. EXCAVATIONS

During the five field seasons at Mayapan considerable excavation in dwelling-type and associated structures was carried on by Carnegie Institution staff and graduate students working with them. At the beginning of the survey by Ruppert and the author there was no set plan for excavation in secular buildings except to keep it down to a minimum. In fact, during the first field season no excavation was engaged in at all. While carrying on the survey of the constructions at the site, however, it soon became apparent that some excavation would be necessary in order to get a clear picture of certain types of structure. With this in mind buildings were recorded for further investigation if it seemed they could give the desired information. At the same time likely places to dig for caches or burials were noted. As time went on, more types of secular buildings were found and a great many more problems presented themselves that only excavation could hope to answer. As a result more and more digging was essential and had to be undertaken.

The following discussion of the excavations does not deal with the details of digging, as they have already been published in Carnegie Institution Current Reports. It is a record of the amount of excavation engaged in from year to year, the buildings dug in, and the reasons for digging in them. Unless otherwise stipulated all dwelling-type structures described rested on their own individual platforms, had thatch or grass roofs, and had the front side open, this last being divided into three or more doorways by masonry columns or wooden posts. A fairly full description of the buildings excavated is given, as they represent most types of structures covered in this report.

As was mentioned above, there was no excavation the first field season and during the second season only a few weeks were devoted to digging in likely places noted the previous year. These locations consisted of depressions in benches or any visible construction below floor level, such as exposed capstones or bared vaults or walls. Bishop Landa, in his *Relaciones de las cosas de Yucatán*, mentions that the dead were buried in their houses or at the back of them (p. 181, quote 10). It was with this in mind that we selected several types of construction for excavation: long low platforms and houses with two and three benches in the front room and one and two doorways leading into the back room. Twenty-two pits were sunk in benches, passageways, back rooms, and terraces in front of buildings with the following results (Ruppert and A. L. Smith, 1952).

Str. J-131a. A dwelling with two benches in the front room and one doorway into the back room. Three pits were dug, two in the north and one in the south bench. Two burials were found, one under the north bench, Burial 4, and one under the south, Burial 3 (p. 233; figs. 15,*e*; 22,*j*).

Str. J-49a. A long, low platform. Three pits were dug into the platform; one exposed a burial vault, Burial Vault 4 (p. 247; figs. 15,*c*; 23,*a*).

Str. J-49b. A two-room dwelling with two benches in the front room and one doorway into the back room. Pits were dug in the east and west benches, the latter being L-shaped. A burial vault, Burial Vault 5, was uncovered in the east bench (p. 247; figs. 15,*d*; 23,*b*).

Str. J-50a. A two-room dwelling with three benches in the front room and two doorways into the back room. The east bench is L-shaped. Three pits were dug, one in each bench. A natural pit containing midden material was found under the east bench and a burial, Burial 2, in the west bench (pp. 232-33).

Str. J-50b. An L-shaped platform supporting an L-shaped bench with walls along its east, west, and south sides (fig. 13,cc). Two large pits were dug in the bench. No burials were found.

A pit was also dug in the terrace supporting the group, and bedrock was encountered at a depth of 50 cm.

Str. J-122c. Rectangular platform. The excavation of a depressed area in its west end uncovered a semicircular burial vault, Burial Vault 6 (p. 247; figs. 15,f; 23,f).

Str. I-94. A two-room dwelling with three benches in the front room and two doorways leading into the back room. The west bench was L-shaped. Pits were sunk in all three benches. The central bench contained a burial vault, Burial Vault 2 (p. 246). Three test pits were dug in the terrace supporting the structure. A small irregular stone-lined cist was found under the floor in front of the west doorway in the front room, Burial Vault 3 (pp. 246-47).

In 1953, the third field season, excavations were confined to four structures: three of the larger dwellings and a group shrine. Trenches were also dug at the base of two large platforms supporting groups (A. L. Smith and Ruppert, 1953).

Str. Q-119a. A two-room dwelling with four benches in the front room and three doorways leading into the back room. The benches at the ends of the front room are L-shaped, and the south central bench has a niche in its south face. Four pits were dug, two in benches and two in the back room. Two partially exposed vaulted subfloor chambers, Burial Vault 9, were completely excavated, as were all standing walls of the building (p. 248; figs. 8,dd; 16,a; 17,f; 23,i-l). It is likely that Str. Q-119a had a beam-and-mortar roof supported by four stone columns along the front or east side. A trench was cut into the talus of the terrace supporting the group to the northeast of Str. Q-119a, and some midden material was recovered.

Str. R-100. A dwelling with a front and a back room and a doorway in the center of the back wall of the back room leading into a small chamber or shrine room. Three doorways lead from the front room into the back room. The front room had four benches, the back room two, and the shrine room a bench, or altar, extending across the back. Excavation in the building, other than outlining the walls where possible, consisted of a series of north-south trenches in line with the central passageway and extending to the underlying bedrock. The entire area of the bench in the shrine room was also excavated to bedrock. A burial, Burial 32, was uncovered between the central benches in the front room (p. 243; fig. 8,ee).

Str. K-52a. A dwelling with a long front room with four benches and three doorways leading into three small back rooms. The end benches are L-shaped. A doorway in the middle of the back wall of the central back room leads into a shrine room with a narrow bench, or altar, extending across the back wall. The neck of a Mayapan Redware jar had been set in the floor in the northwest corner of the room. The south chamber has in its back wall a doorway which probably gave on a terrace. The opening on the east side or front of the building is divided into three doorways by two wall sections. From the conditions of the floors and the amount of debris, it is probable that the building carried a beam-and-mortar roof.

Structure K-52a was completely excavated, pits were sunk in all benches to bedrock, and trenches were dug down to bedrock from the front room through the doorways into the three back rooms. The shrine room was also completely dug out from floor level to bedrock. As a result of this digging two multiple burials, Burials 6 and 7, and one single burial, Burial 5, were found in the central trench, the remains of a skeleton on the floor of the shrine room, Burial 8 (pp. 233-35; figs. 5,b; 15,g), and a cache, Cache 3, of pottery in the south trench under the face of the south central bench (p. 256).

Str. K-52c. A group shrine with two rooms, one facing west and the other south. The south room was a later addition. Pits were dug in both rooms down to bedrock. Under the floor of the north room there was a cache, Cache 4 (p. 257), resting on the capstones of a burial vault containing the remains of a skeleton, Burial 9 (p. 235; figs. 5,*b*; 15,*h*).

Other excavations in the group consisted of a trench to bedrock between Strs. K-52a and K-52c, a 2 m square pit to bedrock through the court floor about 2 m northeast of Str. K-52c, and a trench into the east edge of the large platform supporting the group.

Excavations in the fourth field season, 1954, by Ruppert and the author were confined to a relatively thorough examination of Group A-3 and Str. Q-62, and to spot digging in nine other buildings. The purpose of the spot digging was to find burials or burial vaults, and likely places previously noted were investigated (Ruppert and A. L. Smith, 1954). Excavations were also carried on by J. E. S. Thompson (1954b) in four structures in Square Q, and by Proskouriakoff (1954, pp. 270-71) in one of the most imposing groups at the site, situated in Square R.

Group A-3 (fig. 2). This group was chosen because it has the best-preserved boundary wall at Mayapan. The group lies 252 m outside the city wall. Four of its six constructions, three dwellings and a platform supporting two walls and a bench, were thoroughly excavated; the other two, a section of terracing and a circle of rough stones, needed no excavation. The four buildings excavated once supported palm thatch or grass roofs.

Str. A-3b. Platform with walls on its north and west sides and a bench in the northwest corner. Possibly a kitchen.

Str. A-3c. A dwelling with two rooms. The front room once had two benches. A single doorway leads to the back room. Pits were dug in the two benches and through the floor in the doorway. A burial, Burial 1 (p. 232; fig. 15,*a*), was found under the floor in the doorway, and a burial vault, Burial Vault 1, under the south bench (p. 246; fig. 2,3).

Str. A-3d. A two-room dwelling with two benches in the front room and a doorway leading into the back room. The east bench is L-shaped.

Str. A-3f. A two-room dwelling with two benches in the front room and a doorway leading into a poorly defined back room.

Other excavation in Group A-3 consisted of digging a pit east of Str. A-3d and clearing the boundary wall and the opening in it forming the entrance (fig. 22,*h*).

Str. Q-62. It having been decided that a house-type building was to be consolidated and repaired, Str. Q-62 was chosen for this purpose because it was a good example of an average dwelling and, being in the Main Group, where other reconstruction was going on, was accessible. It was also hoped that its relationship in time with a near-by colonnaded hall, Str. Q-64, could be established. Unfortunately this could not be done.

The dwelling consists of a front room with three benches and three back rooms. The central rear room, which may have served as a shrine, had a narrow bench or altar built against its back wall. Doorways lead from the front to the rooms in back (figs. 8,*z*; 17,*g*). This building was completely excavated, pits were sunk in three benches and in the two end back rooms, and a trench was dug from the front room through the doorway into the central back room. A burial, Burial 15, was found under the central bench in the front room (pp. 236-37; fig. 8,*z*,1). A test trench directly south of Str. Q-62 and in line with the central doorway exposed a multiple burial in a stone-lined tomb, Burial 16 (p. 237).

Str. Z-4b (fig. 5,d). A dwelling with front and back room. There are three benches in the front room and two doorways leading into the back room. The end benches are L-shaped, and the back room has a doorway in its rear wall. The main entrance, the open side of the front room, is divided into three doorways by two masonry columns. From the amount of debris on the floor, Str. Z-4b surely had a beam-and-mortar roof. This building was investigated because part of a vaulted chamber was showing under the west bench. Excavation showed this to be a burial vault, Burial Vault 15, which was entered by means of a passageway in the south end of its west wall (p. 250; fig. 16,b).

Str. AA-13c. Two-room dwelling with three benches in front room, the two end benches being L-shaped, and two doorways leading into the back room. Excavations under the floor of the north doorway, where a sunken area suggested a likely place to dig, exposed a rectangular burial vault under the central bench, Burial Vault 16 (p. 250; fig. 16,c).

Str. AA-24c. A group shrine.

Str. AA-31d. A three-room dwelling with a front room with three benches and two back rooms. The east bench is L-shaped. Doorways lead from the front room to the back rooms. A trench was dug through the east doorway into the rear room.

Str. AA-37. A two-room dwelling with two benches, one L-shaped, in the front room and a doorway leading into the back room. At the south end of this building there is an exterior bench that may have served as a kitchen. Excavation of a depression in the floor between the two benches uncovered a burial, Burial 38 (p. 245; fig. 16,d).

Str. AA-60a. A two-room dwelling, in poor state of repair, with two L-shaped benches in the front room and a doorway leading into the back room. Exposed capstones and vaulting under the west bench led to the excavation of a burial vault, Burial Vault 17. The entrance to this burial vault was by a covered passageway having its opening in the south wall of the back room (pp. 250-51; fig. 16,e).

Str. AA-94. A two-room dwelling with two benches, the north one L-shaped, in the front room and a central doorway leading into the back room from the front room. There are the remains of an altar in the back room in line with the doorway. It was probably built against the now fallen back wall. A depression in the south bench was excavated, exposing a burial vault, Burial Vault 18 (p. 251; fig. 16,g).

Str. AA-103a. A two-room dwelling with three benches in the front room, the one at the north end being L-shaped, and an exterior south bench. Two doorways lead into the back room, which has an exterior doorway at its south end. The building rests on a platform about 20 cm high which extends 4.40 m south of the exterior bench. The capstones of a possible vault were seen in this southern extension of the platform. Investigation brought to light a burial vault containing two skeletons, Burial 39 (p. 245; fig. 16,f).

Str. AA-112a. This structure consists of a large rectangular platform divided lengthwise into two levels. The upper level carries an L-shaped bench in its northwest corner. Near the east edge of the upper level of the platform a masonry-lined depression was showing. This, with a little digging, proved to be a burial vault containing a skeleton, Burial 40 (p. 246; fig. 15,b).

The following four constructions were excavated by J. E. S. Thompson (1954a and 1954b).

Str. Q-208 (fig. 8,ff). This building was chosen for excavation because it appeared to be the residence of some important person. It consists of a long front room with four benches, the ones at either end being L-shaped, and three doorways leading into three small, narrow rear rooms. The central rear room, which served as a shrine, had a narrow, low bench and an altar. The main entrance, on the north side of the building, is divided into five doorways by four masonry columns. Debris on the floor proved the roof to be of the beam-and-mortar type. There is evidence that it caught on fire and collapsed. At the east end of this building there is a fifth room not connected directly with the other rooms. An L-shaped bench occupies most of this room, which has a single doorway in its north side and a wide opening in its east side divided into two doorways by a single column. The southern of these two doorways had been blocked at a later date. Excavation below the floor of Str. Q-208 uncovered parts of an earlier building, Str. Q-208-sub, a cache, Cache 9, immediately in front of the center of the center doorway (p. 258), and a burial, Burial 25, in the front room of Str. Q-208-sub, below the floor between the two middle benches (p. 240; fig. 8,ff).

Str. Q-208a. A small, low platform standing on a subplatform that runs under Str. Q-208. The platform, which is only 1.30 m from Str. Q-208, may have served as its kitchen.

Str. Q-209. A two-room dwelling with two benches in the front room and a central doorway leading into the back room, which has two benches. It was probably the residence of inferior members of the family of the chief who occupied Str. Q-208.

Str. Q-207. A dwelling with a front room with three benches and two doorways leading into a long, narrow back room. The rear room had a doorway in the center of its back wall leading to a shrine room. Structure Q-207 was examined to see whether any relationship could be established between it and Str. Q-208.

Proskouriakoff (1954, pp. 270-71) undertook the investigation of a large group, Strs. R-85 to R-90, in the immediate vicinity of the main ceremonial center. It is one of the most imposing dwelling groups, if not the most imposing, at Mayapan. The group was cleared of bush, and minor excavations were made to clarify the plan, but no major excavation was undertaken until the following year.

The 1955 field season was the fifth and last. At this point it was found that we needed more knowledge, which could only be obtained by excavation, of two classes of remains, namely, the various types of simple dwellings and buildings believed to be residences of the aristocracy or nobility. A considerable amount of digging by various members of the staff and graduate students was carried on in structures of this nature. During the season Ruppert and the author investigated such dwelling groups and also a number of other buildings most of which were selected for their differences in plan from the normal dwelling, which has a front and back room with benches in the front room. They consisted of single-room constructions and structures that faced in two directions. It was hoped that through thorough investigation some idea of the function of these unusual buildings could be gained. In all, they excavated 26 structures (A. L. Smith and Ruppert, 1956).

D. E. and J. E. S. Thompson (1955) excavated a group in Square Q, Strs. Q-169 to Q-173a, that was certainly the residence of an important family. D. E. Thompson also excavated Str. Q-165, and Ann Chowning excavated three near-by buildings, Strs. Q-166 to Q-168, in hopes of finding a chronological relation between them and Str. Q-165 (Chowning and D. E. Thompson, 1956). Proskouriakoff and Temple continued the investigation of the imposing assemblage, Strs. R-85 to R-90, started the previous season. Although the group was too large for complete excavation it was hoped that enough could be done to accomplish three things: first, establish the sequence of major building operations and a sequence in the ceramic types found with them; next, look for tombs in hopes of finding handsome furniture; finally, excavate what was thought might be a kitchen, as no definite kitchen had been identified at Mayapan (Proskouriakoff and Temple, 1955). Pollock carried on limited excavations in a relatively large group, Group Z-50, situated at the southern terminus of the principal sacbe. The purpose of this investigation was to find out whether the group served a religious or a secular function (Pollock, 1956).

Unless otherwise indicated, the detailed descriptions of the following structures may be found in Current Report 36, Carnegie Institution of Washington (A. L. Smith and Ruppert, 1956).

Str. A-1. A single-room building resting on a platform (fig. 12,u). It contained no bench or altar that might have indicated that it was used as a shrine. Excavations showed that there were two floors, one at bedrock and one 0.30 m higher. A cache, Cache 1, was found between floors near the back wall (p. 256; fig. 12,1).

Group J-71 (fig. 5,a). This group was selected primarily because one of its four constructions, Str. J-71a, faced in two directions. Two others, Strs. J-71b and J-71c, are buildings of the normal dwelling type, the former having once supported a beam-and-mortar roof, the latter a roof of grass. The fourth structure, a small group shrine, was in the center of the court.

Str. J-71a (fig. 5,a). A three-room structure with two parallel rooms divided by a medial wall and a room extending across the north end. The building has doorways on all four sides, the two main entrances being on the east and west sides. These consist of large openings divided into three doorways by two columns. At the north end of the structure is a single doorway, and at the south is an opening with a single column in the center forming two doorways leading into the east and west rooms. The north end of the east room opens into the north room, and a doorway in the center of the medial wall gives access to the west room from the east; there are benches on either side of this doorway. From the good condition of the floor and the amount of debris on it, it was evident that a beam-and-mortar roof had been used. A considerable amount of charcoal on the floor may indicate that the roof had been burned. An exploration trench was dug to bedrock from the center of the east room through the doorway as far as the center of the west room.

Str. J-71b (fig. 5,a). A dwelling consisting of a long front room and two back rooms. The front room has a wide opening on its south side divided into three entrances by two masonry piers and a small doorway at either end. Near the central entrance there is an olla neck set in the floor (fig. 5,a,1). Benches extend along the back wall except where it is broken by two doorways leading into the two back rooms. The eastern of these two back rooms, probably a shrine room, is small with a low bench or altar along its back wall. Its only doorway, which leads into the front room, is in line with the central doorway of the structure. The western back room extends to the west end of the building. There is no room at the east end to complement the west back room. This building once had a beam-and-mortar roof which from the amount of charcoal and remains of burned beams on the floor must have been destroyed by fire. A trench in the center of the front room and leading back into the shrine room uncovered an early floor under the front room. It did not seem to be associated with the structure and probably belonged to an early platform.

Str. J-71d (fig. 5,a). A group shrine with a doorway in its north side centered on Str. J-71b. The walls were fallen, but stones lying around the platform that supported them indicated their original position. A pit in the center of the platform showed that it rested on the court floor and brought to light a cache, Cache 2, put through the court floor (p. 256; fig. 5,a,2).

Group K-67 (fig. 3). This group was picked because it was a closely knit unit of four structures surrounded by a property or boundary wall. Three of the structures were of the dwelling type that supported grass or thatch roofs; the fourth was a group altar in the center of the court. The principal building, Str. K-67a, rests on a 2-m-high terrace on the south side of the court. An inset stairway leads to the top of the terrace from the court. Behind Str. K-67a there is a sascab pit which was probably dug for the limestone that was used in making the lime mortar for the construction of the group.

Str. K-67a (fig. 3). A two-room dwelling. Originally the front room had three benches and two doorways leading into the back room; however, at some later date the eastern of the two doorways was blocked and the bench made continuous, filling the passageway leading to the doorway. These benches are L-shaped. The level of the floor in the rear room, except in line with the unblocked doorway, was higher than in the front room. About 0.70 m from the back wall of this rear room the lower level rises to within a few centimeters of the floor of the rest of the room to form a sort of inset altar. Pits were dug in all three benches and in the west end of the back room. A cist was found in the central bench, Burial Vault 7 (pp. 247-48; fig. 3, K-67a,3). A pit through the floor between the two benches on either side of the unblocked doorway exposed a cist containing a skeleton, Burial 10 (p. 235; fig. 3, K-67a,1). Another pit directly north of the cist and in front of the platform supporting Str. K-67a brought to light a cache, Cache 5 (p. 257; fig. 3, K-67a,2).

Str. K-67b (fig. 3). A two-room dwelling with two benches in the front room and a central doorway leading into the back room. The southern end of the rear room is higher than the rest of it. Unfortunately the walls of this room were badly fallen, and so its reconstruction is hypothetical. A trench was dug from the front room through the doorway into the back room.

Str. K-67c (fig. 3). A two-room dwelling with two benches in the front room and a central doorway leading to the rear room. The west bench is L-shaped. The extension of the platform supporting the structure beyond its east wall forms what may have been a partially enclosed kitchen. Pits were dug in both benches and a trench from the front room through the doorway into the back room.

Str. K-67d (fig. 3). A small group altar in the center of the court. A pit sunk in the center to bedrock produced nothing.

Two pits were dug to bedrock in the court, and a trench was cut into the stairway on the north side of the large terrace supporting Str. K-67a. Another pit was dug in the sascab pit just south of Str. K-67a in the hope of finding a refuse dump.

Group Q-244. This group, a unit of four structures, was chosen because of Str. Q-244b, an elaborate dwelling that once supported a beam-and-mortar roof and was obviously the home of a person of some importance. The building is on a large terrace bordering the south side of the court. This terrace had a wide stairway set into its north face. The other three constructions consist of a single-room building on the east side that had supported a grass roof, a long low platform on the west side, and a group altar in the center of the court.

Str. Q-244a. A one-room building with two benches, one rectangular, the other L-shaped. A doorway in the back wall between the benches leads out to a terrace at a lower level. The main entrance facing the court was a wide opening probably divided into three entrances by two wooden posts.

Str. Q-244b (fig. 8,hh). A six-room dwelling consisting of a long front room with an equally long rear room parallel to it, a shrine room back of the rear room, one end room at the west end of the building, and two at the east end. These end rooms were later additions to the main part of the structure. There are three benches in the front room, the one at the east end being L-shaped, and two doorways leading into the rear room. A doorway from the rear room leads into the shrine room, which has a long, low bench or altar extending across its back wall. The room at the west end has an L-shaped bench, and the exterior room at the east end a rectangular one with a wall along its south edge. The front room has a wide opening in its north side which is divided into three entrances by two masonry columns. Between the columns is a round plaster base that may have supported a wooden post, stone idol, or stucco figure (fig. 8,hh,1). The main entrance to the rooms at the west and east ends of Str. Q-244b are divided into two doorways by a single masonry column. The roof of the building had been of beam-and-mortar construction. The façade above the three entrances on the north side had fallen intact in places where the beams that supported it gave way. It rose five courses, 0.60 m above the beams, which was probably the height of the roof. The height from floor to the top of the jambs was 1.70 m. Allowing 0.15 m for the thickness of the beams supporting the façade, the total height of the building from floor to roof was about 2.45 m.

A trench was dug to bedrock through the center of the building as far as the back wall of the shrine room. Pits were also dug in the rooms at the east end of the structure. This digging uncovered a multiple burial, Burial 26, under the floor in the center of the front room (p. 241; fig. 8,hh,2), a cache, Cache 10, under the floor in the doorway leading into the rear room in line with the doorway into the shrine room (p. 258; fig. 8,hh), a small cist, Cache 11, in the floor of the doorway into the shrine room covered by a stone disk (p. 258; fig. 8,hh), and a deposit of copal, Cache 12, under the floor just north of the cache (p. 258; fig. 8,hh). Excavations under the floors of Str. Q-244b also showed several earlier floors and walls and definite evidence of an earlier building which had been razed to its floor level when Str. Q-244b was built.

Str. Q-244c. A low rectangular platform that may once have supported a structure of posts and thatch. It was originally only half its size, having been added to at either end. Pits were sunk in the two ends and the center. The center pit in the original platform contained a burial, Burial 27, and midden material (p. 241).

Str. Q-244d. A group altar in the center of the court in line with the central doorway of Str. Q-244b. A pit in the center of this construction did not produce a cache, but in front of its south side a cist cut out of bedrock did, Cache 13 (p. 258).

Other excavation in the group consisted of a trench into the west side of the larger terrace supporting the group and a pit in the court about halfway between Strs. Q-244b and Q-244d. The pit disclosed a burial, Burial 28 (p. 241).

Str. P-14a (fig. 11,b). A one-room building, possibly an oratory, with a bench at its south end and an altar set in a recess in the center of the back wall which projected at this point to make room for the altar. A pit through the altar uncovered a cache, Cache 6 (p. 257; fig. 11,b,2), and another in the center of the room a multiple burial, Burial 11 (p. 235; fig. 11,b,1).

Str. P-23c (fig. 11,c). A single-room building of the oratory type with its main entrance facing east and a narrow doorway in its south wall. The main entrance is divided into three doorways by two masonry columns; one of the drums of the north column has a knob projecting 0.15 m (similar to fig. 19,l). Although this building had stone columns all the evidence points to its having had a thatch roof. Within the room are a bench built against the north and west walls and an inset altar in the center of the bench along the rear or west wall. A niche in the bench has its opening in the north side of the altar (fig. 11,c,2). Just northeast of the altar is a masonry column. In the southeast corner is what may be the remains of a small bench. An exterior bench at the north end of the structure may have served as a kitchen. It has a wall along its west end, postholes in its northeast and northwest corners (fig. 11,c,1), a good quantity of ash, and three metates associated with it. A pit directly in front of the altar disclosed a multiple burial, Burial 12 (p. 236; fig. 11,c,3).

Str. P-28b (figs. 11,j; 18,i). A single-room building of the oratory type with its entrance on the north side. It had two masonry columns dividing the entrance into three doorways, and it once carried a beam-and-mortar roof. Within the room a bench extends around the three sides, interrupted in the center of the back wall by an altar recessed into the bench. A step projects from the base of the altar. Masonry walls rise from the bench on either side of the altar. A pit in the altar disclosed a masonry-lined shaft, Burial Vault 8 (p. 248; fig. 11,j,1), and another in the center of the room exposed a burial, Burial 13 (p. 236; fig. 11,j,1 and 2).

Str. Q-37a (figs. 11,k; 18,d). A single-room building of the oratory type with its entrance on the east side. It had two inner masonry columns set just out from the corners of a bench that carries around the three sides of the room. Two other masonry columns divide the entrance into three doorways. A small altar was set into the center of the bench against the back wall; a pit was dug into it. Another pit dug in the center of the room brought to light a burial, Burial 14 (p. 236; fig. 11,k,1). Evidence on the floor of the room proved the roof to have been of the beam-and-mortar type.

Str. R-30b. A group altar consisting of a wall 2 m long, 0.60 m wide, and one course high, with a low platform, 1.10 m long, built against its west side. It faced Str. R-30d, the principal building in the group. A pit was dug 0.40 m to bedrock through the altar.

Str. R-30f (fig. 11,i). A building of the oratory type in a group of six structures. This one-room construction had a wide opening on its north side divided into three doorways by two masonry columns. A bench extending across the back wall was interrupted in the center by an inset area, most likely an altar. It is interesting that all the masonry of Str. R-30f is of carefully worked Puuc-type stones. Here again, as in Str. P-23c, in spite of the fact that there are masonry columns in the entrance, the evidence (no floor remaining and little debris) indicates a thatch roof. A pit was sunk to bedrock in the center of the room.

Str. R-91 (figs. 11,g; 18,c). A single-room oratory, probably associated with the large group, Strs. R-85 to R-90, to its immediate west. The entrance, on its west side, is a wide opening divided into three doorways by two masonry columns. Evidence on the floor of the room proved that the building once had a beam-and-mortar roof. On either side of a rectangular raised area in the center of the room is a column, the one on the south having a projecting knob in the shape of a jaguar head (figs. 11,g,2; 19,l). Against the center of the back wall is an altar faced with Puuc-type stones; it once supported two seated stucco figures, of which only the feet remain (fig. 18,g). A trench starting directly in front of Str. R-91 and continuing through the central doorway and platform in the center of the room uncovered a cache, Cache 23, in the platform (p. 260; fig. 11,g,1), and a pit in the altar brought to light another one, Cache 24 (p. 261; fig. 11,g).

Str. R-126a (figs. 11,f; 18,j). A single-room building of the oratory type with a wide opening on its north side divided into three entrances by two masonry columns. From the existing evidence this structure once had a beam-and-mortar roof. Inside the room there are two masonry columns and a bench extending across the east and south walls and part of the west wall. An inset altar with a low platform in front of it and walls rising from the bench on either side is situated in the center of the bench along the back wall. Just west of the altar, in the face of the bench, is a niche roofed with stone slabs (figs. 11,f,1; 18,b and j). A trench was dug to bedrock in the center of the room.

Str. R-142c (fig. 11,d). A single-room building of the oratory type with the main entrance on the south side. Two masonry columns divided this entrance into three doorways. Another entrance was a small doorway in the west wall. Benches extend around three sides of the room, the one along the back wall having an inset altar in the center. A niche in the bench east of the altar was roofed with flat stones (fig. 11,d,1). The building once carried a beam-and-mortar roof. A pit in the center of the room exposed a burial, Burial 33 (p. 243; fig. 11,d,2), but a pit in the altar disclosed no cache.

Str. R-171b. A single-room building that may have served as an oratory. Its entrance is a wide opening on the north side that was probably divided into three doorways by two wooden posts. Its roof was undoubtedly, from all the evidence, of beam-and-mortar construction. This is unusual for a structure with wooden posts in the entrance instead of masonry columns. Some changes were observed in the bench in the room. The latest period shows a bench abutting the back and end walls. At one time the bench had been interrupted in the center of the back wall by a recessed altar, but this had been filled in. A trench was dug to bedrock through the center of the structure as far as the back wall.

Str. S-133a (fig. 8,u). A dwelling-type building with a long front room with three benches separated by two doorways leading into two back rooms of approximately the same size. The eastern of these two back rooms has a doorway in its east end with a sill 0.20 m above floor level. Pits were sunk in the central bench, the west bench, and between the east and central benches. The pit in the central bench exposed a burial vault, Burial Vault 10 (p. 249; fig. 8,u,1), and another in front of the platform supporting Str. S-133a disclosed a burial, Burial 34 (pp. 243-44).

Str. S-133b (fig. 14,hh). A four-room building, with an unusual plan, that may have been used as a dwelling. Three of the rooms are parallel, long axis north and south, and one is a lateral room at the south end open on three sides. The lateral room has a bench against the back wall and a doorway to the east of the bench leading into the east room. The east room has a wide opening in its east side divided into three entrances by two masonry columns (fig. 19,j). There are three benches against the west wall of this room divided by two doorways leading into the central room, which has an altar against the center of its west wall. To the north of the altar a pottery neck had been placed in the floor at the time of its construction (fig. 14,hh,1). On either side of the southern or main doorway into the east room from the central room were two cordholders set in the floor (fig. 14,hh,2), and two other cordholders, that had probably fallen out of the wall, were close by (fig. 20,d). Two more cordholders, just like those in the floor of the central room (figs. 14,hh,3; 20,c), were also found near the north jamb of the opening on the east side of the east room. The west room is open on its west side, the opening being divided into three doorways by two masonry columns like the east side of the east room. A row of stones on the floor between the south column and south jamb may have fallen from the roof. There are two benches in the west room: one across the south end, blocking an early doorway; and one against the east wall, extending almost the length of the room, and having a narrow wall along its north end. An unusual construction was a small plaster block, with a pottery bowl set in it, projecting from the center of the east side of the platform supporting Str. S-133b (figs. 14,hh,6; 20,a). It may have been used for burning copal.

Pits were dug in the southern and central benches in the east room. A crypt was found under each bench. The one under the central bench contained a multiple burial, Burial 35 (p. 244; figs. 14,hh,4; 23,c); the one under the southern bench, Burial Vault 11, had not been used for burial (p. 249; figs. 14,hh,5; 23,d,e). Both vaults could be entered by narrow passages through the east wall of the central room. The openings were on either side of the main doorway (figs. 14,hh,4,5; 23,c-e). A trench from the east room through the main doorway and through the altar produced no caches. The roof of this building, which had been of beam-and-mortar, was destroyed by fire.

Str. Y-2d (figs. 8,v; 18,a). A two-room dwelling. The front room has a wide opening on its east side which is divided into three entrances by two masonry columns. A doorway in the center of the back wall leads into the rear room. On either side of the doorway are benches that extend to the ends of the room and along the north and south walls. The back room had a low bench at its south end. Pits were sunk in all benches, in the center of the back room, and in the front room in front of the doorway leading into the back room. A burial, Burial 36, was uncovered by the last (p. 244; fig. 8,v,1), and burial vaults were found in both benches in the front room, Burial Vaults 12 (p. 249; fig. 8,v,3) and 13 (p. 249; fig. 8,v,4), and below the bench in the back room, Burial Vault 14 (p. 249; fig. 8,v,2). The roof of Str. Y-2d had been of beam-and-mortar construction.

Str. Y-8b (fig. 11,h). A two-room building consisting of a front room, a small shrine room at the back, and an exterior bench at the east. This structure probably was used as an oratory and the exterior bench as its kitchen. Its entrance is a wide opening on the north side, which was probably divided into three doorways by two wooden posts. The roof, from all the evidence, must have been of thatch. The main chamber had two L-shaped benches extending along the back and end walls. A doorway in the center of the back wall leads into the small shrine room, which had an altar against the center of its rear wall. The corners of the altar are formed by Puuc-type spool ornaments (fig. 18,h). Pits were dug in the altar, in front of the altar, and in the front room. The pit in the front room uncovered a multiple burial, Burial 37 (pp. 244-45; fig. 11,h,1).

Str. Q-165 (Chowning and D. E. Thompson, 1956). This two-room building was excavated in the hope of discovering whether it was primarily associated with a near-by colonnaded hall, Str. Q-164, or a residential group, Strs. Q-166 to Q-168. The main, or east, room of Str. Q-165 has a wide entrance in its north side divided into three doorways by two masonry columns. Debris on the floor indicated that it once had a beam-and-mortar roof. Inside the room there are two L-shaped benches against the back wall and extending along the whole east wall and along the west wall as far as a doorway leading into the west room. These benches were separated by a niche and a higher altar. In front of the niche a dais of the same height as the niche protruded into the room. There were two masonry columns in the room in front of the corners formed by the L-shaped benches. The west room has a doorway in its south wall and a low bench extending almost to the doorway.

Examination uncovered a multiple burial or ossuary, Burial 17, under the floor in the center of the east room which extended under the dais (p. 237; fig. 23,h). In the west room the narrow opening to a natural cave in the bedrock was found near its center. The opening, which was below floor level, had been closed by several stone slabs. Three skeletons and a cremation were found in this cave Burial 18 (p. 238). Another burial, Burial 19, was found directly above the floor in the south part of the room, and a natural pit in the bedrock in the west part of the room contained two other skeletons, Burial 20 (p. 238). It would seem that the main room of Str. Q-165 served as an oratory or shrine for the residents of the Group Q-166 to 168. Artifacts found on the floor of the smaller room suggest that it was a kitchen. If so, it may have been used for the ritual preparation of food for occupants of the colonnaded hall or for persons secluded in the adjacent oratory.

Group of Strs. Q-166 to 168 (Chowning and D. E. Thompson, 1956). It was hoped that through excavation the chronological relationship of this group with Str. Q-165 could be established. Unfortunately this was not possible, as Str. Q-165 is built on a higher outcrop of rock and could not be connected to the other buildings by floors.

Str. Q-168. This dwelling-type construction is the principal building of the three in the group. It has a long front room open on its east side, which contains three benches, two rectangular and one L-shaped, separated by two doorways leading into the back room. This rear chamber is divided in two by a low bench. At the south end of the rear room a narrow passageway leads into a transverse room which contains two benches and has a doorway in its south wall. Excavation in passageways and benches yielded only one burial, Burial 21, which was in the fill under the edge of the southwest bench in the transverse room (pp. 238-39).

Str. Q-166. A platform with a wall along its south edge supporting a small platform with walls along its south and east edges.

Str. Q-167. The plan of this construction is uncertain.

Chowning, in her discussion of Strs. Q-166 and Q-167, believes that both may have been kitchens for Str. Q-168 and that the group was certainly not ceremonial. Possibly it housed retainers or servants of those who lived in the more elaborate buildings, Strs. Q-164 and Q-165. Another suggestion is that the whole group, Strs. Q-165 to Q-168, housed persons connected with the colonnaded hall, Str. Q-164.

Group of Strs. Q-169 to Q-173a (D. E. and J. E. S. Thompson, 1955). This group was chosen because it was an imposing one situated less than 100 m from the Temple of Kukulkan in the main ceremonial center (fig. 4). Its principal building, moreover, was large and well made; undoubtedly it was the residence of an important chief or priest. As the other buildings in the group appeared to be dependent upon Str. Q-169, it offered an opportunity of studying their functions.

Str. Q-169 (fig. 4,a,e). A four-room building roughly L-shaped with its main entrance on the north side facing the court or plaza. The main room, facing the court, has a four-column entrance on its north side and a doorway in its east end. Two doorways in the medial wall lead from the front room to a long rear room, and a third to a small rear room to the west of the long room. The fourth room, at the west end of the building, extends back beyond the rear rooms to form the lower part of the L. It faces west and has its main entrance divided by a column and a pier. The north end of the room was partly open so that it could be entered from the front room. A doorway in the east wall leads into the small rear room. There are four rectangular benches in the main room, and two benches, one L-shaped, in the room at the west end of the building. An altar with a low platform in front rests against the back wall of the long rear room (fig. 19,a). It is nearly in line with the middle doorway in the medial wall and the central opening of the four-column doorway. From the debris on the floors of the rooms it was obvious that the building had a beam-and-mortar roof. Three courses of well dressed stone of Puuc-style workmanship uncovered immediately in front of the plinth before the main entrance had probably rested on the doorway beams. This means that the roof was at least 0.60 m, without counting the lintel thickness, above the height of the doorway. Pits in benches and the altar produced only a few sherds, but a cache, Cache 7, was found beneath the front edge of the plinth in front of the center of the main entrance (p. 257; fig. 4,a,e), and an elaborate burial, Burial 22, was uncovered below the floor between the two central benches in the main room (p. 239; figs. 4,a,1; 23,g). There is little doubt that this building was the residence of a person of high rank.

Str. Q-170 (figs. 4,a,b; 18,e). A group shrine located in the center of the court. The shrine rests on a platform faced on all sides with X-shaped stones of Puuc style alternating with areas of plain stone. Here the Puuc-type stones had been used to produce a symmetrical design which was covered with a thin coat of plaster that allowed it to show. The entrance was on the west side facing the oratory or shrine room of Str. Q-172. The debris on the floor indicated that the walls stood fairly high and that the roof was either vaulted or of beam-and-mortar. The shrine had been looted, the top floor and another below it having been broken through.

Str. Q-171 (fig. 4,a,c). A dwelling located on the north side of the court and facing it. It is composed of three rooms and a larger courtyard, or possibly fourth room, at the west end. The front or main room is open on the south side and has two L-shaped and one rectangular bench. Two doorways in the medial wall between the benches lead into rear rooms. The west room has a narrow bench against the south wall west of the doorway and a doorway in its west wall leading to the courtyard. This courtyard is formed by the continuation of the back wall of the rear rooms, a west wall, and the west end of the front and west rear rooms. It is open on its south side and has a doorway in its west wall. At the east end of the building the terrace has been added to and a section of wall built along part of its north edge. Structure Q-171 is definitely inferior to Str. Q-169, and from the lack of debris on the floor it had a thatch roof which indicates it probably was used by less important members of the household.

Str. Q-172 (fig. 4,a,d). A two-room building on the west side of the court. From the debris in both rooms it undoubtedly had a beam-and-mortar roof. The north room had a wide entrance on its east side divided into three doorways by two masonry columns. Inside the room there was an altar against the back wall. Benches extend almost the lengths of the north and south walls and join the altar against the west wall. A circular depression in the floor near the south bench held a mixture of charcoal and mortar (fig. 4,a,3). The south room originally had entrances on three sides. The one on the east was later blocked by the addition of a platform about 1.5 m high. The main entrance is a wide opening in the south side divided into two entrances by a single masonry column. The other doorway is in the north wall at the west end of the room. There are two rectangular benches in the south chamber, one against the west wall and one against the north. The front or south face of the north bench has two niches in it.

Excavation disclosed a cache, Cache 8, below the floor immediately east of the original plinth of the north room and about on a line with the center of the entrance (p. 257; fig. 4,a,d). More digging uncovered a jar in the altar that contained a cremation, Burial 23 (pp. 239-40; fig. 4,a), and in front of the altar a burial vault containing four skeletons, Burial 24 (p. 240; fig. 4,a,2). The burial vault was covered with a low platform (fig. 19,h). It has been suggested by Thompson that the north room of Str. Q-172 served as a family oratory for the group and that the benches in it were for use by participants during periods of ritualistic seclusion before and during ceremonies. He also suggests that the south room normally housed the participants but the benches in the north room could take care of the overflow.

Str. Q-173 (fig. 4,a). Originally a simple structure of two benches separated by a medial wall, it presumably was enlarged later by using the adjoining walls of Strs. Q-172 and Q-173a, building a wall west of the original structure, and erecting three masonry columns within the area to support a roof.

Str. Q-173a (fig. 4,a). This construction is roughly triangular in shape and has no entrance. Its east wall abuts the west wall of the north room of Str. Q-172. The walls probably stood at least a meter high, but it is not known whether the construction had a roof or not. Just what function this enclosure served is problematical. Thompson suggests the possibility of its being used for water storage but believes that possibly its walls were not impermeable enough to hold water. As an alternative he suggests that it may have served as a place for the storage of maize and other produce. He then goes on to say that Str. Q-173 may have been the residence of the caluac, the overseer of the supplies needed by the household of the lord.

Group of Strs. R-85 to R-90 (Proskouriakoff and Temple, 1955). This residential group, one of the most elaborate at Mayapan, lies about 300 m east of the principal pyramid at the site. Although close to the main ceremonial group it does not face it. Instead, it faces east toward an equally elaborate residential group, Strs. R-95 to R-99, which is almost identical in plan. The group formed by Strs. R-85 to R-90 was not built all at once, but went through a number of building states. It was probably occupied during several generations before its final abandonment at the time of the destruction of Mayapan about the middle of the fifteenth century. Only a brief description of its development will be given here.

Originally the plan consisted of a broad terrace supporting two building platforms joined at right angles and a vaulted passageway near the juncture. Soon after this construction was completed a monumental stairway with a central shrine was built against the east terrace. Still later the main terrace was enlarged, as were the building platforms. The houses on these platforms were rebuilt several times, and new structures were added, before the group attained its final form. Although little of the earlier buildings was found, their general arrangement and the continued use of an early group shrine, Str. R-89, indicate that the group was originally planned as a residence.

In its final shape this assemblage had nine closely associated buildings of varying size and serving different functions (fig. 6,a). A large terrace, covering a natural rise in the ground, supports a high platform extending around its north, west, and south sides, which in turn supports three houses, one on each side, Strs. R-85 to R-87. The court, formed by the platform on three sides of the terrace, has steps at the southwest corner that lead down to a vaulted passage giving access to the group under one of the houses. In front of the exterior entrance to this passage there are the remains of an elaborate vestibule. On the east side of the court there is a fourth house, Str. R-88, in front of which are two small shrines, Strs. R-89 and R-90. Structure R-90 faces west and is centered on Str. R-86; Str. R-89 faces the opposite direction, is built at a lower level, and is reached by a short flight of steps leading into a small areaway. Two other small structures in the court are Strs. 85a and 86b, the latter in the northwest corner and the former against the face of the north platform. The remaining building is Str. R-86a, a kitchen at the southwest corner of the platform adjoining Strs. R-86 and R-87.

Besides the passageway leading into the court there are exterior stairways on all four sides, the principal one probably being on the east side, the direction in which the group faced. Stairways also lead from the court to the top of the platform on its east and south sides.

Proskouriakoff suggests that several small house mounds in the immediate vicinity of the group are related to it, as well as Str. R-91, an oratory facing the east side (p. 193), and that it is possible that the group is only the main residence of a larger estate, the whole being surrounded by a boundary wall. She goes on to say that this may explain the elaborate arrangements at the entrance of the vaulted passageway which may have been the only direct approach to the group from outside the property.

Str. R-86 (fig. 6,a). A broad stairway, covering an earlier stairway that had balustrades (fig. 20,e), leads to the top of the platform supporting Str. R-86, the largest house of the group, which certainly was the residence of the head of the family. It is a five-room building with a long front room and three back rooms. At some later date a long, open colonnaded gallery was added to the back of the building. Except for one masonry column and part of the floor, this has fallen down the steep terrace edge. It may have supported a beam-and-mortar or a thatch roof. The concentration of tools in this location suggests that the colonnade served as some sort of workshop.

The front room has a wide opening on its east side divided into five doorways by four masonry columns. There is also a narrow doorway at the south end of the east side. The debris on the floor definitely indicates that the roof of Str. R-86 was beam-and-mortar and that it was burned immediately after abandonment. Doorways lead out of both ends of the front room. The one at the north end was originally a wide opening divided into two entrances by a single column. This was when the front room skirted the north end of the building and before it was divided to form a rear room at this end. The doorway at the south end leads into a kitchen, Str. R-86a. Doorways lead from the front room into the two end back rooms, and two doorways into the central back room. Of these two, one is wide and in the center of the east wall of the rear central room; the other is narrow and south of it. Against the back wall of the front room, extending north from the wide doorway that leads into the rear room, is a bench.

The rear central room, which served as a shrine room, had a richly decorated altar against its back wall. The decoration has fallen from its face, but the elements recovered show that it consisted of a large mask composed of typical elements of the Puuc style with a huge curved nose. In front of the altar is a dais that had been excavated to remove a cache. A well cut stone drum lying near by may have stood on the dais and been removed when the cache was excavated. Attached to the altar on the south side is a rectangular masonry block on which stands a small drum altar.

The north rear room has a narrow doorway leading out to the colonnade to the west. The rear room at the south end has a narrow doorway in its south wall and a wide opening in its west side that is divided into two doorways by a masonry column and that leads to the colonnaded gallery.

Excavations in Str. R-86 brought to light two burials in the front room, Burials 29 and 30 (p. 242; fig. 6,a,13 and 14), and one cache, Cache 14, under the altar of the shrine room (p. 259; fig. 6,a,12).

Str. R-87 (fig. 6,a). A broad stairway flanked by balustrades (fig. 20,g) leads to the top of the platform supporting Str. R-87, a four-room residence consisting of a long front room and three back rooms. The building once carried a beam-and-mortar roof which was destroyed by fire. From the amount of pieces of sculpture found in the debris in front of the structure, most of which could be identified as mask elements, it must have been elaborately decorated with stones taken from masks on earlier constructions and re-used. The front room was almost completely open on its north side. This opening was divided into five doorways by four masonry columns. A doorway at the east end leads to a wide terrace, and another at the opposite end gives access to Str. R-86a, a kitchen. Three doorways through the back wall lead into the back rooms. There are three benches against the back wall of the room; they were 0.65 m high and were finished with a small projecting molding.

The central rear room, a shrine room (fig. 19,b), had a dais against the center of the back wall and an altar set in an alcove projecting back from the center of the back wall. A small drain in the northeast corner of the room was formed by the mouth of a jar set in the loose rock fill below the floor (fig. 6,a,7).

The west back room has a thin partition wall projecting back into the room from the west jamb of its doorway. The east rear room has a doorway leading to the terrace to the east as well as the one leading into the front room.

Excavation disclosed three caches in the shrine room: one in the center of the dais, Cache 16; another in the center of the altar against the back wall, Cache 17; and the third, Cache 18, in the southwest corner of the room (p. 259; fig. 6,a,4, 5, and 6).

Str. R-86a (figs. 6,a; 21,e,f). This construction fills the more or less square area between Strs. R-86 and R-87 at their southwest juncture. From the types of pottery vessels found in the room and other evidence there was no doubt that this room had been a kitchen. Although it served both Strs. R-86 and R-87, its plan is more closely tied in with that of the former. The medial wall of Str. R-86 extends south to form the back wall of Str. R-86a, and its beam-and-mortar roof was probably one with the roof of Str. R-86a. That had also been burned. A narrow passageway lies between Strs. R-86a and R-87. Excavation in the kitchen revealed a long succession of floors and renovations that will not be described here.

In its final stage the kitchen had doorways leading into Strs. R-86 and R-87 as well as two small apertures through the walls. The east side of the kitchen consists of a wide opening, with two columns, leading into the passageway and Str. R-87. A third column is partly buried in an L-shaped bench occupying the northwest corner of the room. Another column had been removed and replaced by a post (fig. 6,a,10). In the middle of the south wall is a wide opening with a low wall running across it, against the center of which was found a hearth consisting of three flat stones placed close together (fig. 6,a,8). In front of the entrance, between a column and the south jamb of the east side, is a bench with a low wall across the back. A badly burned area in the center of this bench against the low wall indicated a second hearth (fig. 6,a,9). A doorway in the west wall leads to a terrace that continued on around to the south. Columns on this terrace supported either a beam-and-mortar or a thatch roof. From the broken metates and manos found in the debris on the terrace slope and the complete lack of such items inside the kitchen, it has been suggested that corn was ground on these roofed terraces and that the kitchen was used for the preparation of food and possibly the housing of servants.

Str. R-85 (fig. 6). This building of the dwelling type rests on a platform on the north side of the court, which it faces. It is a three-room structure: a long front room and two back rooms. Its roof had been of beam-and-mortar construction. Although little excavation was made in the structure, it was evident that there were two benches in the front room and two doorways leading into the back rooms. A third doorway at the east end of the room leads to a narrow terrace. The main entrance is on the south side, where a wide opening is divided into three doorways by two masonry columns.

Str. R-88 (fig. 6,a). This structure, which is on the east side of the court, was partly cleared, proving to be in general of the dwelling type but with a number of peculiarities. There are two rooms in front instead of a single long room, and a corridor between the two back rooms leads to the terrace in back. Debris on the floor indicated that the building once carried a beam-and-mortar roof. The front room had once been a simple long room but was later divided by a wall. The southern of the two front rooms has a wide doorway in its west wall and a doorway leading to the southern rear room. This latter has a bench against the back wall and a small column altar set in a bed of loose mortar and stones on the latest floor in the northeast corner. The northern front room has two benches against the back wall with a doorway between leading to the northern back room and a doorway in the north end. The main entrance is a wide opening in the west wall divided into three doorways by two masonry columns.

Str. R-89 (figs. 6,a,b; 18,f). This is a group shrine built on a broad stairway with which it forms a single construction. It consists of a small room with a doorway in its east side spanned by a stone lintel. There is evidence that there may have been a mask over the doorway, which interrupted the upper member of the three-member molding that forms the upper façade. The roof is a rough stone corbel of uncoursed slabs projecting inward from the front and side walls of the building and from the corners. A larger, irregular capstone does not quite fill the gap between the corbel stones, which is closed by three smaller capstones resting on the first. The roof was finished with three layers of plaster. At some later date an altar or platform was built on it. In its final state the stairway upon which the shrine was built was covered except for a narrow flight next to the north side of the shrine, and the terrace against which the stairway was built was extended to the east. The narrow stairway leads down to a small areaway built in front of Str. R-89, its floor level being just one step below that of the shrine floor. In front of the doorway leading into the shrine are two stone rings set in the floor, and below them a cache, Cache 20, was discovered (p. 260; fig. 6,a,3). In the northeast corner of the areaway a rectangular hole faced with stone formed an opening into a drain that went deep into the fill. It is possible that an upright altar, whose broken pieces were found in the court, was associated with the late platform built on the roof of Str. R-89.

Str. R-90 (fig. 6,a). This is a small group shrine in the court just north of Str. R-89. It is centered on Str. R-86, which it faces. From the debris on the floor it appears that the walls probably never rose much above their present height of 0.50 m. It is likely the walls were carried up in perishable materials and that the roof was of thatch. The sides of the shrine are open, and two masonry piers and the rear wall are built of vertically set, heavy stones. Against the rear wall is a T-shaped bench or altar. Excavation uncovered two caches, one directly in front of the shrine, Cache 21, and the other under its south edge, Cache 22 (p. 260; fig. 6,a,1 and 2). From a pit in front of the shrine an oval altar with a round top and a cylindrical stone, possibly an altar, were recovered.

Str. R-85a (fig. 6,a). This is another group shrine, built against the platform supporting Str. R-85 on the north side of the court. From the debris on the floor it evidently had a beam-and-mortar roof. Originally it had a wide doorway in its south wall and narrow doorways in the east and west sides, but the doorway in the east side was later blocked. A low bench extends across the back wall. On the platform behind the shrine was a column drum carved with a three-member molding. It was probably displaced from its original position and may once have been centered on the platform and used as an altar.

Str. R-86b (figs. 6,a; 21,g). This is a small chamber on the court floor situated in the corner formed by the platform supporting Strs. R-85 and R-86. The south wall of the structure has two small niches above the floor capped by thin slabs that probably supported the beams of a flat roof at the level of the platform. A doorway in the east wall gives access to the room. A cache, Cache 15, was found in the floor near the north jamb (p. 259). There is nothing to indicate that this little room was used as a shrine. It may have served as a place for storage.

The passage under the west end of Str. R-87 (figs. 6,a; 21,h) has at its north end the typical form of the vault associated with Puuc architectural style. The vault varies, however, throughout the length of the passage (fig. 6,c). A trench at the entrance to the vaulted passage exposed the skeleton of a child in a crevice in the rock, Burial 31 (pp. 242-43; fig. 6,a,11).

Group Z-50 (Pollock, 1956). This group lies at the southern end of the principal causeway at Mayapan. At the northern end of the causeway there is a large residential group (Strs. R-95 to R-99). Group Z-50 was of particular interest because it did not seem to fall definitely into either a secular or a religious category. It consists of a large platform supporting buildings on its east, south, and west sides (fig. 7,a). These face upon a court with a group altar in the center; about 3 m north of the group altar lay a "sacrificial stone" (fig. 7,a,2). The group has three approaches, the main one being from the north where the sacbe enters and the other two at the northwest and east. Only the building at the south end of the court could be classed as residential, and its plan is certainly not typical. Although the architecture is not like that found in the usual residential group the pottery recovered was much like household material. It has been suggested that Group Z-50 served as a place where the occupants of the large residential group or "palace" at the north end of the sacbe could participate in certain religious ceremonies that were better, or had to be, carried on away from the family residence.

Str. Z-50a (fig. 7,a). This structure, on the east side of the court, has a ground plan that is not common at Mayapan but has been found elsewhere at the site forming part of groups that have at least one typical dwelling-type building. It has been suggested that this structure of aberrant plan may have been used for the entertainment of visitors, or for some minor ritual, rather than the dwelling of a family. Structure Z-50a has entrances on all four sides, those on the east and west being the main entrances. The one to the east is centered on a stairway, flanked by balustrades, leading up from the surrounding ground level to the top of the platform supporting the group. The east and west entrances are wide openings divided into three doorways by two masonry columns. The building is divided into two rooms by a medial wall running north and south. A doorway in the center of this wall leads from one room to the other. The east room has a bench against the north half of the medial wall and a doorway at each end. The west room has two benches against the central wall separated by the doorways to the west room. There is an exit at either end of the west room. From the lack of debris on the floor there is little doubt that the roof of Str. Z-50a was of perishable materials, probably thatch, but the ground-level room, built into the east side of the platform supporting Group Z-50, just south of the balustraded stairway mentioned above, was roofed with beam-and-mortar construction (fig. 7,a,1). The roof of this chamber had probably been at the same level as that of the platform.

Str. Z-50b (fig. 7,a). At the south end of the court and facing the main approach, Str. Z-50b occupies the most important position in the group. It does not have the plan of a typical dwelling, but it does come closer to it than the other buildings in the group. Both depth and kind of debris within the structure indicate that it had a beam-and-mortar roof. The structure has three rooms: a long front one on the north side, a back room extending along the western half of the rear of the building, and a room along the eastern half of the rear and continuing around the east end. The front room has a bench against the west half of the south wall, a wide opening in the north side divided into three doorways by two masonry columns, and a central doorway in its back wall leading into the west rear room. This room has an altar in its southeast corner roughly centered on the doorway. Excavation in the altar disclosed a cache, Cache 25 (p. 261; fig. 7,a). The other rear room has a bench in its southeast corner and wide openings in its south and east sides, each divided by a single column to form two entrances. There is also a narrow doorway in the north end of the room. The bench in the southeast corner of this room was added to so that it extended to the east outside the building. The interior and exterior bench arrangement, the wide terrace at this end of the building, plus the presence of a deposit of much ash and bone off the terrace edge make it look as if the room had been used as a kitchen.

Str. Z-50c (fig. 7,a). This building, which faces the west side of the court, consists of a long single room and is similar in plan to the colonnaded halls in the main ceremonial group. The purpose of structures of this type is not definitely known, but it is believed that they may have been used for residential as well as ceremonial purposes. Structure Z-50c has a wide opening on its east side divided into five entrances by four masonry columns. At either end of the room a narrow doorway leads to the platform supporting the building. There is another narrow doorway in the north end of the back wall; from it a bench, built against the back wall, extends the length of the room. It is divided in the middle by an opening which contains an altar set back from the face of the bench against the rear wall of the room. The top of the altar is below the level of the top of the bench. The debris on the floor left no doubt that at the north end of the room the building carried a beam-and-mortar roof which had been burned. Excavation in the altar did not uncover a cache but did show that there probably had been one which had been removed, Cache 26 (p. 261; fig. 7,a).

Just south of Str. Z-50c there is an opening in the platform supporting it. This opening has a diameter at the top of not more than 0.50 m. It continues down for about 0.90 m at this width and then widens to about 1 m. Its total depth is roughly 1.50 m. Its purpose can only be guessed at. It could not have served as a cistern, for it would not have held water. Very likely it was a drain, as the floor around the opening sloped down to it.

Str. Z-50d. A small platform near the center of the court that may have been used as a group altar. It is roughly rectangular, and is divided into three parts, the central part being lower than the two ends. Fragments of modeled stucco were found along the east edge of the platform near the center, indicating that it may once have supported a stucco figure.

Almost exactly in the middle of the court and just north of Str. Z-50d, lying on its side, is a monument shaped like a ''sacrificial stone'' (fig. 7,a,2). There was no way of telling whether it merely fell over, and is more or less in its original position, or whether it has been moved. It may well have been associated with the small platform, Str. Z-50d.

3. ARCHITECTURE

Chapter 3 deals with the various architectural features of the residential buildings at Mayapan and their associated structures. It takes up assemblage, groups and boundary walls, roads, and cenotes, and compares ancient family groups with modern ones. Materials, tools, and masonry used in construction are described, and the various types of structures and their possible functions are discussed. Also the component parts of the constructions involved are considered in detail as well as interior and exterior decoration. Finally, the distribution of the Mayapan-type dwelling is taken up.

Assemblage

At Mayapan the assemblage of secular and associated structures falls into two principal parts: their general distribution throughout the whole site, and the more closely associated arrangement in the family groups.

The assemblage or settlement pattern of Mayapan comes as close to real urbanism as any major Maya city so far investigated. Within the great wall that surrounds the city there are some 4000 structures, half of which, 2100, are dwellings, and, with the exception of about 140 ceremonial buildings, the remainder are constructions associated with the dwellings. The most concentrated area of construction is around the main ceremonial group, which contained some 100-odd religious and governmental buildings located slightly west of the center of the site. It is within the vicinity of this ceremonial center that most of the large, elaborate dwelling groups are located, undoubtedly the homes of the more important leaders of the city.

In his description of Mayapan (p. 179, quote 1) Landa refers to a wall only an eighth of a league long with two narrow gates which surrounded the temple of Kukulcan and many other buildings. He says that within this enclosure they also built houses for the lords. He then goes on to say (pp. 179-80, quote 2) that, since within this enclosure there were only temples and houses for the lords and high priests, they ordered houses to be built outside, where they could keep servants and where people from the towns of the lords could stay when they came to the city on business. Another description of Mayapan from the Relaciones de Yucatán (pp. 181-82, quote 11) mentions that the wall around the city encompassed more than sixty thousand dwellings. These early accounts of Mayapan certainly indicate that there were at one time two walls, one a smaller inner wall around the ceremonial center and houses of the rulers, and another much larger around the whole site. The outer wall, which is roughly oval and more than 9 km long, has seven major and five minor gates giving access to the city from all directions. Although a thorough search was made for the inner wall not a trace of it could be found. Landa does say (p. 179, quote 1) that this inner wall was not very high and that it was laid dry. The ceremonial center is close by Rancho San Joaquin and as a result had more stone robbed for building of modern walls than any other area of the site. There is no doubt that if such a wall existed it would mainly have been destroyed, but it does seem incredible that no sign of it is left.

As well as the main ceremonial center, which is placed around Cenote Ch'en Mul, there are four small religious groups, two of which are located next to cenotes. The largest of these, consisting of 11 structures, is in the northeastern part of the site near Cenote Itzmal Ch'en. Another with four structures is just south of Cenote X-Coton near the southeastern Gate T. A third with five structures is close to the north wall in Square E, Strs. E-9 to E-13. In the fourth group there are only three buildings, Strs. J-109 to J-111, halfway between the north and south side of the site in Square J.

Ruins are densest immediately around the main ceremonial center and in the southwestern part of the city, buildings in the northern and eastern halves being less crowded. Outside the city wall, dwellings are much more widely separated and continue for only a short distance. In all about 125 are shown on the map and are included in the 4000 total count of structures at Mayapan. Almost all these constructions outside the wall are simple dwellings. About 40 of them are isolated buildings; the others are divided among 31 groups, mostly of two houses each.

On the map (see back cover pocket) the houses at Mayapan are seen to be spread at random over the terrain with no arrangement that conforms to any definite city plan. This lack of plan is due to the terrain, which is very irregular, and to the preference for the tops of rocky hillocks for the location of houses. These small raised areas, ranging from 1 to 4 m in elevation, are thickly scattered throughout the site and almost all are occupied by one or more structures. In the thinly populated districts most of the dwellings are on these natural knolls, but in the more thickly settled parts of the city people were forced to build their homes on the lower ground level as there were not enough of the raised building areas for all. Outside the wall, where there is plenty of room and no crowding of buildings, all but 15 of the 125-odd structures are on natural elevations. This preference for building houses on elevations is mentioned in the Relación de Tecanto y Tepacán, which says that "the ancients also were fond of living high up, as is seen in most of the said ancient houses" (pp. 182-83, quote 16) and again in the Relación de Sotuta (p. 182, quote 12). There are two obvious reasons why it was sensible to have one's house above the general level of the terrain: coolness, as they would be more open to the breezes, and dryness, due to natural drainage.

Landa's description of the type of town the natives lived in before the Spanish Conquest is possibly the account that best fits the general layout of the buildings at Mayapan, both ceremonial and secular. Landa says that they had their temples and plazas in the middle of the town, and around them stood the houses of the lords and priests, and then those of the most important people. Beyond these came the houses of the rich and those held in high esteem, and at the outskirts of the town were the houses of the lower classes (p. 180, quote 4). This description is certainly very close to what we find at Mayapan.

Several features other than the location of the various types of structures, ceremonial and secular, bear directly on assemblage or settlement pattern, namely house groups, orientation, boundary walls, roads, and cenotes. A detailed discussion of these features, and of how they affect the general picture, follows.

House Groups. Of the 4000 structures at Mayapan, 2800 were in domestic house groups and some 140 were ceremonial and located in the main and four minor ceremonial groups. This leaves about 1100 individual structures that were not directly associated with any other structure. At least 700 of them are house mounds; the rest, with a few exceptions, are platforms, terraces, and remains too far gone to do more than record. These disassociated structures were scattered throughout the site, some on rises, but mostly on low ground. Most of them, especially those in the low areas, were almost certainly the homes of the lower class, the more desirable elevated places being occupied by the more important people.

In all there are about 1100 house groups at Mayapan; of these well over half, around 750, are groups of two structures, 240 are of three, 65 are of four, 16 of five, 7 of six, and 2 of seven. This does not include the large house groups formed by Strs. R-85 to 90, which had nine, or Strs. R-95 to 99, and Strs. R-102 to 108. Most groups of three or more structures have a rectangular arrangement around a small court. Other than actual dwellings they comprise constructions that served a variety of functions. Platforms, either attached to a dwelling, or standing alone, that may have been used as kitchens, are present in almost every group. Many of the groups have either group altars or group shrines, usually placed in the court in line with the center of the principal house. Some of the more pretentious groups belonging to the lords or priests had private oratories, and there are other buildings and platforms included in groups whose functions are far from clear. These constructions of varied and, for many, questionable or unknown usage are discussed in detail below.

The number of dwellings in a group varies from one to four. The majority, over 600, contain only one dwelling, more than 300 have two dwellings, about 35 have three, and possibly 3 have four. If there is more than one dwelling in a group, one of them is usually more elaborate than the other or others and was undoubtedly occupied by the head of the family. The less pretentious dwellings were probably inhabited by the sons-in-law and their families or the servants of the head of the family. Landa (p. 180, quote 3) mentions that newly married couples were accustomed to build houses opposite those of their fathers or their fathers-in-law, where they lived during their first years. Elsewhere Landa says that, after a wife had been given to a young man, ''At once they had a feast and banquet, and from this time forward the son-in-law stayed in the home of his father-in-law, working for his father-in-law for five or six years.'' (Tozzer, 1941, p. 101.)

The arrangement of structures in house groups varies considerably, owing perhaps to the terrain or to the wishes of the owner, or probably to both. A look at the revised edition of the map of Mayapan (see back cover pocket) will give a better idea of the distribution and arrangement of buildings within groups at the site than any description. The density of construction in the vicinity of the main ceremonial group immediately meets the eye. Upon closer study of the map it will be seen that all but a few of the large and presumably important groups, of which there are about 30, are located fairly close to the principal civic and religious center, in the middle of which was the Temple of Kukulcan.

Certainly one of the most important groups is that formed by Strs. R-85 to 90, which lies just east of the center (pp. 197-201, fig. 6). It consists of nine buildings, four dwellings and a kitchen (Str. R-86a) grouped around a court in which are three group shrines (Strs. R-85a, R-89, and R-90) and what may represent a storage room (Str. R-86b). There are stairways on four sides leading into the court of this elaborate residential group as well as a vaulted passage on its south side. An oratory standing alone to the west of the group probably belonged to it. This type of house group, which was built on a high terrace and enclosed a good-sized court, might well be called a ''palace.'' Besides the one described above there are two other such groups near by formed by Strs. R-95 to 99 and Strs. R-102 to 108. The former is entered by a vaulted passage on its north side.

Another imposing group, shown in figure 4, is formed by Strs. Q-169 to Q-173a (pp. 196-97). Here we have a large, important dwelling where the head of the family lived (Str. Q-169), a more modest dwelling (Str. Q-171) where possibly his daughter and son-in-law lived, a family oratory with attached living quarters (Str. Q-172) where participants in ceremonies could stay in seclusion, and (Str. Q-173) possibly the house of the ''caluac,'' or overseer of the lord, who lived in the principal house. Behind this house of the ''caluac'' is a small structure (Str. Q-173a) that may have been used for storage. In the center of the group there is a group shrine (Str. Q-170). The Thompsons suggest that a series of short retaining walls west of Str. Q-171 may have served as outlines for small kitchen gardens or as foundations for duck, turkey, or dog pens (J. E. S. Thompson and D. E. Thompson, 1955, p. 231).

Figure 3 is the plan of a house group (K-67) with three dwellings on three sides of a court and a group altar in the center. This group has been fully described in Chapter 2 (pp. 190-91). Group

A-3 (p. 187, fig. 2) is the largest group found outside the city wall. It is not on the map of the site, but its direction is indicated. It lies in Square A, 252 m from the northwest corner of the city wall. It has three dwellings and a possible kitchen (Str. A-3b). Two other constructions in the group consist of a terrace (Str. A-3a) and the remains of a circle of stones (Str. A-3e).

Figure 5,a to f, shows six house groups:

a: Group J-71 (p. 190). Here we have four structures around a court: a main dwelling (Str. J-71b), a dwelling of lesser importance (Str. J-71c), a group shrine (Str. J-71d) near the center of the court, and a building of unknown function (J-71a) with doorways on four sides, the main entrances being east and west.

b: Group K-52 (pp. 186-87). This group also has four structures on a terrace. On the east side are two dwellings, one elaborate and the other quite simple (Strs. K-52a and K-52b). Across a court and on the other side of the terrace is a long construction of unknown function (Str. K-52d). In the center of the court there is a group shrine (Str. K-52c). Stairways with balustrades lead up to the court level on the north and south sides of the terrace. An interesting feature of this group is that the terrace supporting it was being enlarged at its southeast corner. This addition was still under construction when the group was abandoned (fig. 5,b,1).

c and d: Groups S-30 and Z-4. Each group has three dwellings around three sides of a court, one dwelling in each group being more imposing than the other two. Group S-30 has a group shrine in the center of its court, and Group Z-4 has a group altar on the north side of its court centered on the principal dwelling.

e: Group Z-152. This is a group with a major and a minor dwelling, and a group shrine. These three structures are supported by a terrace with an inset stairway on its north side.

f: Group S-26. A two-dwelling group with a small platform with walls on two sides that may have served as a kitchen for both houses. One of the dwellings, Str. S-26b, is larger than the other and was probably the house of the head of the family.

Group Z-50 (fig. 7,a) has been described in detail (pp. 201-3). It is not a residential group but probably served as a place for the occupants of the palace formed by Strs. R-95 to 99 to retire to during certain religious rites and ceremonies. This would seem likely, as the two groups are connected by a road.

Group K-79 (fig. 7,b) is not a typical house group. It does have a simple dwelling, Str. K-79c, but all the remaining structures are of a religious nature. Structure K-79b is most probably an oratory, and Str. K-79a is more like the colonnaded halls in the main ceremonial group than a dwelling. These halls are believed to have been used for both ceremonial and residential purposes. The fourth structure in the group, Str. K-79d, is a group altar, opposite the oratory. Here, as in Group Z-50, we may have a place for the occupants of near-by dwellings to retire to during religious ceremonies, or it may have been used as a place for religious training. Structure K-79c, the dwelling-type building, has an exterior platform at its north end which may have been a kitchen. It is possible that this structure was used as sleeping as well as cooking quarters for those in retirement.

The groups described above are, for the most part, of the more imposing types. It should be remembered that the great majority of house groups are composed of only two simple structures. Bullard illustrates a more or less typical group of this kind, Group AA-89 (Bullard, 1954, fig. 3). Here there are two dwellings supported by a terrace and facing on a court. The larger of the dwellings has three benches in the front room and two doorways leading into the back room; the smaller has two benches in the front room and one doorway leading into the back room. An inset stairway on the north side of the terrace supports the group. Figure 1 gives a good picture of the distribution of the smaller and simpler house groups in Squares H and I. These squares are well away from the main ceremonial center and contain no large or important dwelling groups except Group H-24, which has five structures supported by a large terrace 2 m high. Group H-24 is very close to the small ceremonial center near Cenote Itzmal Ch'en and may have been the residence of some important individual connected with that center.

Orientation. In several of the Relaciones reference is made to the orientation of dwellings. Evidently the direction in which their houses faced was important to the ancient Maya, or, to put it another way, they almost always avoided having their houses face west. This objection to the west was probably due to the afternoon heat and the prevailing winds and rains, but it may have had some religious significance as well. The Relación de Sotuta says that "the houses looked toward the east and the north and south and very seldom or never toward the west and if they had some buildings which looked toward the west they were the temples of idols or oratories" (p. 182, quote 12). Here we have the implication that these religious structures always faced west, a direction reserved especially for them. This of course is not true, but the fact they did face other directions than west (the Temple of Kukulcan faces north) does not completely do away with the possibility that there may have been religious as well as climatic reasons for not facing their houses toward the setting sun. In the Relación de Tecanto y Tepacán (p. 182, quote 16) it says that "most of the houses face the east, the north, and the south, and none faces the west unless they are oratories or temples, some of which do face the west." The last part of this statement fits the orientation situation at Mayapan quite well, for most of the oratories in house groups do not face west (see fig. 11) nor do many of the group shrines. As for the house groups, more than 400 face east, about 175 face north, roughly 75 south, and most of the rest either northeast or southeast. Very few face either southwest or northwest, and less than 20 face west. Of the 2000 or more dwellings at Mayapan only about 100 faced west. The most popular direction, or at least the one in which most houses faced, was east; many also faced south, with north in a poor third place.

Boundary walls. Stone walls, ranging in age from the occupation of Mayapan to the present time, cover the entire site. Bullard spent two field seasons determining which were the pre-Conquest walls and which post-Conquest; the latter, being made by robbing the early walls and structures, served as corrals and enclosures for cattle as well as for fences around fields. By the end of the second season's work he had clarified the problem and was able in most cases to distinguish between early and late walls and to give a good idea of their purpose and pattern (Bullard, 1954). His map showing the ancient boundary walls in the eastern part of the site (Bullard, 1952, fig. 1), and the complete plots of the walls in Squares H and I (fig. 1), give a good idea of their irregular arrangement.

These walls play an important part in the general settlement pattern of the city. It was found that boundary walls, except in connection with several cenotes and where they sometimes formed lanes, were used almost entirely in connection with dwellings, either single houses or dwelling groups, their purpose being to delimit the lots surrounding them. Almost all the single houses or house groups at Mayapan have boundary walls that completely or partly surround them. Only near the ceremonial centers are boundary walls lacking around dwelling groups. It has been suggested that these residences may have had some special function in connection with the religious centers, such as places for priests or officials to live. Although the Main Group is practically free of boundary walls, as are the small ceremonial centers of Itzmal Ch'en, X-Coton, and Strs. J-109 to 111, they apparently almost surround the fourth small ceremonial group in Square E, Strs. E-9 to 13, according to Jones' original map (Jones, 1952). This seems to be an exception to the general practice. Most boundary walls found in the Main Group are associated with houses that may have served ceremonial buildings.

Boundary walls average from 0.60 to 1 m high, although some reach 1.50 m. They were made of large boulders set on end, the spaces between them probably being chinked with small stones. No evidence was found that they had ever been covered with plaster. As was mentioned above, these rough walls surrounded or partially surrounded isolated houses or groups of houses, though seldom was more than one group enclosed within a wall. The walls that do not completely surround house groups are probably the result of robbing of stone for use elsewhere. Walls around houses have various patterns, but the most common are oval or rectangular enclosures with rounded corners. The use of a common wall between lots is quite frequent, as is the use of the city wall for one side of a lot or a house near it. Sometimes boundary walls abut house platforms or terraces. A series of plans of property walls is given in figure 2, Bullard, 1952. Besides figure 1, which shows the pattern of boundary walls in Groups H and I, figures 2 and 3, of Groups A-3 and K-67, show two boundary walls, each with an entrance or gateway.

Although all boundary walls must have had some kind of entrance, only a few gateways were found. From what was observed the common gateway appears to have been merely a gap in the wall 1 or 1.5 m wide (Bullard, 1952, fig. 3,c). Only a few houses have more elaborate entrances than the simple gateway. These are short lanes formed by parallel walls, 1 to 2 m apart, which run from an opening in the boundary wall to a stairway leading to the terrace upon which the house stands. Groups 28 and 41 in Square I are examples of this (fig. 1; also see Bullard, 1952, fig. 3,d). The wall around Group A-3, which is outside the city wall, is the best preserved at Mayapan (fig. 22,h and i). Other examples of pre-Columbian boundary walls at the site may be seen in figure 22,d-f (also see Bullard, 1952, fig. 3,a and b, and 1954, fig. 5,a-c).

There was no evidence that the larger or more important house groups had greater enclosures than the more modest ones. It would seem that the only purpose of the walls around houses was to mark the limits of the yards that surrounded them. They served merely as boundary markers of the land occupied by individual families or family groups.

Mayapan apparently is the only ruined city, so far investigated, that has its house groups surrounded by boundary walls. Outside of Wauchope's mention of the possibility of such walls at Uaxactun (Wauchope, 1934, p. 143; 1938, p. 9) and Andrews (1943, p. 73) at Las Ruinas, there is no mention of walls in the literature. Bullard, during the 1953 season, visited the ruins of Kabah, Sayil, and Uxmal but found no such system of boundary walls as at Mayapan. At Chichen Itza he found one example of three small platforms surrounded by a wall, but exploration around the site proved that this was not a common custom at Chichen Itza.

Roads. There are only three sacbes or roads at Mayapan. The largest of these goes from the "palace" dwelling group, Strs. R-95 to 99, to Group Z-50. One of the smaller sacbes lies in the southwest corner of Square E. Starting from the small ceremonial group composed of Strs. E-9 to 13 it goes north-northwest for about 90 m and ends in an open area. The other, in the southeast corner of Square Y, runs southwest from Str. Y-52 to Str. Y-105.

Besides the three sacbes mentioned above there are two long lanes formed by parallel walls of the boundary type that run east-west across Square I. They differ from the many little lanes formed by neighboring house group walls in that they are relatively long and for the most part run independently of house-lot walls (fig. 1). The northern lane is about 400 m long and goes from the west edge of Square I to within 100 m of Cenote Itzmal Ch'en. The south lane starts in the western part of the square, about 150 m south of the northern lane, and wanders in a northeast direction until it joins it a short distance from its end. Several short lanes branch off from the two long ones; one leads to Group I-26, and another to Group I-28.

Although a careful reconnaissance was made over the whole site no lanes comparable to the two in Square I were found. Throughout the city there is a maze of innumerable boundary walls, often forming short lanes between adjacent groups. There does not seem to be any organized system of paths or streets—just confusion. It must have been quite a feat to find one's way around from one part of the city to another. Bullard took special pains to try to find roadways that lead from the major gates in the city wall to the main religious group, but he was unable to discover any trace of a roadway or formal route. A fairly straight route could be followed from the large gate in Square O (Gate O) to the Main Group without crossing property walls, but no evidence indicating a definite road or street could be found. He says, ''The 'Main Streets' of Mayapan must have been for the most part simple trails which ran through the spaces between house lots'' (Bullard, 1954, p. 244).

Cenotes. The map of Mayapan (see back cover pocket) shows 26 cenotes within the city wall and one, Cenote Sac Uayum, outside the wall in Square X. This last has water. Of the cenotes inside the wall, 19 have water; in the remaining 7 water was not detected. The map indicates that no water was detected in Cenotes Ch'en Mul or X-Coton, but R. E. Smith found water holes in both (R. E. Smith, 1954a, p. 223; 1953a, p. 68). Two large cenotes not shown on the map were found less than 0.5 km northeast of Gate G (Bullard, 1953, p. 263). Three possible cenotes, not on the map and not included in the 26 mentioned above, were discovered by Bullard within the city wall, two in Square I and one in Square F (Bullard, 1954, pp. 243 and 245). Most of the cenotes are located in the southwestern part of the site, which is the most densely populated. The northeastern and southeastern areas have a few, but there is none in the northwest corner, which must have made it difficult for the inhabitants living in this part of the city. The absence of large groups or important buildings would indicate that it was probably one of the poorest sections of Mayapan; another indication is that there is no major gate in the northwest part of the city wall.

Landa, in his description of the arrangement of the religious and secular buildings in towns, says that ''the wells, if there were but few of them, were near the houses of the lords'' (p. 180, quote 4). At Mayapan 3 of the 29 cenotes—this includes the 3 possible cenotes discovered by Bullard—were directly associated with ceremonial centers: Cenote Ch'en Mul with the Main Group, Cenote Itzmal Ch'en and Cenote X-Coton with two minor groups. All three had water. Although there is no definite proof, there is a likelihood that some kind of cenote cult existed at Mayapan and that ceremonial rites were practiced in the three cenotes mentioned above. There is, indeed, some evidence that such ceremonies did exist. The temple near the rim of Cenote Ch'en Mul (P. E. Smith, 1955, pp. 109-115), the ceremonial platform in Cenote X-Coton (R. E. Smith, 1953a, pp. 68-69), and the rain ceremony, called ''Chac chac,'' performed annually at Cenote Itzmal Ch'en by the present inhabitants of the near-by village of Telchaquillo (Shook, 1952, pp. 249-250), suggest it. There also is a report by a Spanish missionary, Fray Alonso Ponce, who visited Mayapan 50 years after the Conquest, that according to local tradition victims were thrown into the cenote at the foot of the Castillo after they had been sacrificed to the gods (Noyes, 1932, p. 355). Nothing was found in the cenotes to prove this report, but it suggests that ceremonies associated with cenotes probably did go on at Mayapan.

Other than the three cenotes discussed above there was no indication that any of them were especially reserved for the lords or for religious purposes. No cenote was found within the boundary walls of a home lot; on the contrary, cenotes were always located in areas between systems of boundary walls or lanes and hence accessible to the general populace. In the northern long lane in Square I, near the center, where two short lanes converge from the north and south, there is a cenote (fig. 7). This well, Cenote Acambalam, had three or four steps going down to a natural passage that led to water. The position of Cenote Acambalam at the juncture of lanes leading in four directions indicates its importance as a water supply for this part of the city. Roughly 40 m west of this cenote the south wall of the long northern lane swings south to avoid a natural sinkhole in the limestone which drops straight down for about 4 m to join a sloping passage. This may well be another cenote. In Square R, Cenote X-Leth has a short path leading to within a few meters of its entrance.

Several cenotes are encircled or partly encircled by walls. A boundary wall encircles the south side of cenote Itzmal Ch'en, possibly to restrict it for the use of the near-by ceremonial center (fig. 1). In Square I, just northwest of Group 56, there is a depression in the bedrock about 4 m across that had been completely filled with rocks in order to keep cattle from falling in. According to an inhabitant of Telchaquillo this is the entrance to a cenote. The entrance is completely encircled at a distance of about 3 m by a boundary wall (fig. 1). In Square F there is a similar situation. Here a natural pothole, 1.50 m in diameter and filled with earth to within 1.2 m of its rim, was surrounded by an ancient wall about 4 m from the edge of the hole (Str. F-38). The possibility that this was a cenote is slight. Bullard suggests that it might have contained water (Bullard, 1954, p. 245).

Population. The results of attempts to estimate the population of ruined cities are likely to be inaccurate when based upon the number of house mounds in the vicinity of a ruin and the number of people living in each house. There are several questions, other than how many occupants there were to a house, that usually are hard to answer satisfactorily. There are the problems of how far away house mounds can be and still be considered part of a site, how many houses were occupied at the same time, and in many areas, such as in the tropical rain forest of Peten, Guatemala, it is often difficult, without excavation, to tell what is and what is not a house mound.

At Mayapan none of these questions presents any great problem. Structures are all confined within the city wall or a short distance from it, which eliminates the problem of how far they extend from the site and which did or did not belong to it. Owing to the lack of space for new houses, and the fact that virtually all the desirable elevated areas are built on, there is little doubt that almost all, if not all, the houses were lived in at the same time. Almost all the more elaborate homes with masonry roofs, when excavated, were found to have earlier foundations under them, and it would take little effort to build new houses of pole or pole and clay walls and thatched roofs on earlier house sites of similar dwellings. It is unlikely that many houses were abandoned. If a house became too decrepit to live in, it was probably torn down and a new one built almost immediately. As for abandonment after burying an individual under the floor of a house, there is plenty of evidence to show that this was not done (p. 254-55). Finally, because of the lack of soil at Mayapan and the relatively good condition of the house remains, which made it possible to follow the plans of most of them without excavation, it was a fairly simple task to get a quite accurate count of structures that were definitely dwellings.

One of the Relaciones describing Mayapan says that "within the walls there are reckoned to have been more than sixty thousand dwellings, not counting the environs" (pp. 181-82, quote 11). This, of course, is a fantastic exaggeration, which, as Termer points out, would mean that Mayapan had a population of 480,000, surpassing the present population of the states of Yucatan, Campeche, and Quintana Roo by about 100,000 (Termer, 1951, p. 104). Our estimate of dwellings at the site is about 2100.

The question of the number of occupants to a house is an important one. Shattuck and Redfield have each made a study of the number of persons in a household in Yucatan. Shattuck's figures range from 4.5 to 7.5 occupants per house (Shattuck and collaborators, 1933, pp. 106, 140). Redfield arrived at an average of 5.6 persons (Redfield and Villa R., 1934, p. 91, table 6). If we accept his average, the population of Mayapan would be, using our count of roughly 2100 dwellings, between 11,000 and 12,000, which seems like a reasonable estimate.

Modern family groups. There is quite a resemblance between the modern Yucatan dwelling units and the ancient house groups at Mayapan. Although the modern houses differ from the ancient dwellings, being apsidal in plan rather than rectangular, and having only a single room rather than a front and back room, their general arrangement in the group is not dissimilar from many of the groups at Mayapan.

Figure 7,c, d, and e shows the plans of three house units at the village of Telchaquillo. The group in figure 7,c is composed of three dwellings placed around three sides of a court or open area, Strs. 1, 2, and 3; a kitchen, Str. 4, across the court from Str. 1, used by all those who lived in the group; two pens for chickens, Strs. 5; and a well, Str. 6. The dwellings were occupied by the head of the family and his relations. In Telchaquillo the girl goes to live with her husband's family, just the opposite from the ancient custom where the boy goes to his father-in-law's home. Figure 7,d, a group of four structures, has two dwellings, Strs. 1 and 3, a storage house, Str. 2, and a well, Str. 4. Structure 1 served a dual purpose, for it was used as a kitchen as well as a dwelling. Figure 7,e is another group of four structures, but here there are two dwellings, Strs. 1 and 2, a communal kitchen, Str. 3, and Str. 4, a well.

Almost all groups had their own well, but one did not; a neighbor's was used. All units were surrounded by stone walls about 1.50 m high and had an entrance opening on the street. In the examples shown the houses are set back from the wall. Occasionally, however, the wall abuts both ends of a dwelling, so that to enter the group one must go through the house (fig. 17,a, b, and e); this is sometimes the arrangement in the house groups at Mayapan (Bullard, 1952, fig. 2,h and i). If the front of the house is directly on the street, there is often a raised platform in front with wing walls at either end and sometimes benches flanking the entrance (fig. 17,a, b, and d). These porches, especially if they have benches, are not unlike the front room of some of the houses at Mayapan, the main difference being that the thatch roof does not cover the porch of the modern house.

The property or boundary walls surrounding these modern groups are very similar to the ancient property walls. They are often made of large stones set on end with small stones placed between them, and they are laid dry without any mortar. A good example is shown in figure 22,c. If the small stones were removed from this modern wall, it would look almost exactly like the pre-Columbian boundary walls shown in figure 22,d and e.

Taken as a whole, these modern family lots, surrounded by a wall and consisting of several dwellings grouped around an open area in which there was often a communal kitchen, are very similar to all but the more important groups at Mayapan. Kitchens in the ancient dwelling groups, as pointed out on page 219, were probably either small separate structures or platforms at the ends of houses.

Materials

Building materials at Mayapan fall into two categories: nonperishable, which remain and can be studied; and perishable, which have for the most part rotted away and disappeared long ago. For the former we have early references as well as the actual remains; for the latter, with a few exceptions, we have only the early sources to depend on plus materials used by the present-day Yucatan Maya in building their houses. There has probably been little change in materials used in the construction of wood-and-thatch houses since pre-Columbian times.

As in most areas, the builders of Mayapan utilized mainly materials at hand. To be sure, the *Relación de la Villa de Santa* says, "(as for material) it is brought to it by water, in canoes, from a quarter of a league, from a league and the farthest from a league and a half away" (p. 183, quote 19). There being no water transportation in the area, however, the inhabitants of Mayapan had no such means for transporting building materials. Fortunately for them the most important item, limestone, was everywhere at hand and could easily be quarried. Limestone was used as building stone and also was burned in order to make lime for mortar, for plaster for surfacing floors and walls, and for stucco decoration. Below the hard limestone cap lies soft sascab or marl, which was used instead of sand, there being no sand in the area, to mix with lime in the making of mortar. Sascab was also used in the fill. In the early writings it was called white earth (Tozzer, 1941, p. 18, note 106, p. 171). There are many references in the Relaciones to stone, white earth, and lime, and their uses (p. 180, quote 5; p. 180, quote 6; p. 182, quote 16; p. 183, quote 17).

The quarrying of limestone was undoubtedly carried on throughout the site from ledges and outcrops of bedrock. Several instances of quarrying are mentioned by Shook (1952a, pp. 9, 11, and 16). Sascab pits are sometimes found near house groups, like the one behind Str. K-67a in Group K-67 (fig. 3). Undoubtedly the largest single source of sascab was a cave north of the Castillo (Str. Q-162) in Square Q. On the map it is called Cenote Ch'en Chooch. A thorough search of this cave by Shook, Ruppert, Bullard, and the author proved that it was not a cenote at all but a huge sascab mine. The main room, which apparently had mostly been excavated out of the sascab, was about 50 m across and 4 m high. Many passages leading off the main room were dug to obtain sascab. A number of columns had been left, probably as a precaution against the roof's collapsing. Stephens, who visited this cave, gives a description of it (Stephens, 1843, vol. 1, p. 129).

Besides the stone that had to be quarried and shaped for building purposes, many Puuc-like stones, plain and carved, were used in the construction of houses. There is little difficulty in distinguishing these well cut and faced stones from the much more crudely cut and seldom faced building stones of the Mayapan period. Although these stones, fashioned in the typical Puuc manner, must have come from an earlier occupation of the site, not a single building of the period was found.

The Relación de los Pueblos de Tezal y Temax mentions the use of mud in the construction of house walls (p. 183, quote 18). Although there can be little doubt that many of the houses had their walls of poles encased in mud or clay, we found no evidence that could prove it. Possibly the roaming of cattle and the constant burning of milpa fires over the ruins would destroy all traces of such construction.

Among the perishable materials of construction, wood, of course, was of the greatest importance. Many different kinds of wood went into the building of a thatch house, for every part of the roof frame had to be made of a special variety suited for its purpose. In houses with masonry walls and beam-and-mortar roofs, wood was used for lintels over doorways and to support the roof construction, as well as on occasion in tombs to hold up the masonry above. The impressions made by beams have sometimes been found in collapsed beam-and-mortar roofs and occasionally even a fragment of a beam. Wooden beams and poles are mentioned often in the Relaciones (pp. 182-83, quotes 15 to 19). Landa, in his description of the great variety of trees in Yucatan and their uses, mentions a tree that was very hard and suitable for doorposts, and others from the pounded bark of which they made a liquid for polishing the plastered walls (Tozzer, 1941, pp. 197-98).

Other perishable building materials were special vines used for tying together and securing the many poles and posts that make up the frame and walls (p. 183, quote 17), and grass and palm for the roofs (p. 180, quote 5; pp. 182-83, quotes 15 to 19). Another material necessary in construction was a certain kind of grass, which was chopped up and mixed with mud so that it would hold together in the walls (p. 183, quote 18).

Tools

The ancient inhabitants of Mayapan had tools of stone, obsidian, bone, and wood (see part 4). Although some copper was found at the site it was used only in ornaments and not to make axes or other implements. Landa points this out when speaking of the buildings in Yucatan: "They are all of stone very well hewn, although there is no metal in the country with which they could have been worked" (Tozzer, 1941, p. 18). In another place he says that "buildings were built, without having any kind of metal with which to build them" (Tozzer, 1941, p. 171).

From limestone and flint, the local stone, axes, picks, chisels, scrapers, drills, awls, hammerstones, rubbing stones, polishing stones for walls and floors, bark beaters, and mortars and pestles were made. The last were probably used for grinding up paints for decorating the walls of the houses of the lords, which Landa says were painted with great elegance (p. 180, quote 5). Axes of flint were scarce, but they must have been necessary for cutting trees and many other purposes. According to Hester (1953, p. 289), "fist axes" of unworked limestone could be satisfactory, and this may be why some types of stone tools are so rarely identified in the Maya area. Grooved stones that could have served as plumb bobs were found. Obsidian, which had to be imported, served to make sharp cutting tools. Rubbing stones, hammerstones, whetstones, and honing tools were made from imported stone.

Wood, of course, must have contributed in many ways: for handles for axes, and hammers, rough rollers and tampers, scaffolds and ladders, and probably in tools for applying plaster to walls and floors. There must have been special tools of bone and wood for making stucco decorations, and wedges for splitting limestone were certainly of wood. Rope and cord also must have played an important part in building, moving and lifting large stones, and lining up walls. Landa mentions rope and bark: "There is a tree of great height and size which bears a fruit like St. John's bread (algarroba), full of black kernels, which the Indians use as food in time of need and of their roots they make pails to draw water from their wells and norias. There are other trees from the bark of which the indians make small buckets to draw water for themselves, and others from which they make their ropes" (Tozzer, 1941, p. 198). As water was necessary for the mixing of mortar, rope and buckets were certainly used to haul it from the cenotes. One of the cenotes at Mayapan, Cenote Xot Zum Ch'en (well of the rope cut), has an opening, a circular shaft about 1.5 m in diameter, which is spanned by a large stone with a groove in the center cut by ropes being let down and pulled up in procuring water.

Masonry

By far the greater part of the masonry found in dwellings and their associated structures at Mayapan consists of what has been called block-and-slab. The majority of stones used in building are uncut, rough blocks or slabs. Almost all the well cut, dressed stones that are found re-used in most constructions come from an earlier period of occupation and are fashioned in the typical Puuc manner. Some of the doorjambs, cornerstones, and stones placed at the end of walls, however, are nicely cut and faced, although probably made in the Mayapan period. The slabs and blocks were laid up vertically or horizontally, and often were mixed in the same wall (figs. 18,f; 19,b; 21,c,e,f).

Mortar in walls of terraces and buildings varied. Sometimes stones were laid in lime mortar, but it would seem that for the most part mud mortar was probably used with an abundance of spalls and a thick layer of lime plaster that would penetrate the open spaces and hold the wall together. The walls of terraces supporting groups were often made of very large slabs; one measures 0.40 by 0.75 by 1.70 m (fig. 22,g). It is likely that most of these terrace walls were not surfaced with plaster.

Proskouriakoff and Temple (1955, pp. 291-93) describe the structural details of the residential quadrangle they excavated, Strs. R-85 to R-90. Here evidently there was a change in the masonry in the terraces, the walls of the early phase being built of roughly dressed limestone blocks, smaller, more uniform in size, and more regularly coursed than the stones in the terraces that covered them. They also found that the Puuc-like stones were used more sparingly than later. Stairways in this "palace like" dwelling in the early phase were made of blocks laid horizontally and were heavily plastered, whereas in the later phases the risers of the steps are usually of Puuc-style stones set on edge (fig. 20,e-g). This particular building group is mentioned because it is one of the few examples of superimposed construction showing a change in masonry style. Early construction was found under the floors of Str. Q-244b, but a great deal more excavation would have been necessary to get the plan of the building. J. E. S. Thompson (1954b, p. 74) uncovered parts of an earlier building, Q-208-sub, which for the most part duplicated the later building, Q-208. The earlier building was a more commodious dwelling than the later but had inferior masonry.

In most structures it was found that when Puuc-style stones were used they were generally placed where they could be seen, as in the faces of benches and altars and along the front of the platform supporting a building (figs. 17,f; 18,e,g,h,k; 19,e-h). As might be expected, these beautifully worked stones were found in far greater quantities in the masonry of the more elaborate dwellings and their associated oratories and group shrines than in dwellings of the poorer class (figs. 18,e-k; 19,e-h; 20,f,g). Puuc-style stones were occasionally used in the freestanding walls of superstructures, almost always in combination with the rough slabs or blocks of the Mayapan period, rarely alone (figs. 18,k; 19,b-h; 21,c,d).

Some attempt was made to course the stones, but it was not an easy task with the rough slabs and blocks the masons had to work with. With abundant use of spalls and mortar, however, some regularity was obtained (figs. 19,b; 20,f; 21,c,f; 23,d). Very often little or no attempt was made to course the stones (figs. 18,a,d; 21,d,e).

Freestanding walls in buildings average from 0.40 to 0.50 m in thickness, those in dwellings with thatch being around 0.40 m and those with beam-and-mortar roofs around 0.50 m. As a rule the walls are built of slabs set on end in mortar to form a rough facing on both sides with a fill of mortar and small stones between (fig. 17,f,g). Occasionally walls were made of uncoursed overlapping rough slabs set in good lime mortar, an example being the walls in Str. Y-2d (figs. 18,a; 21,d). Once in a while medial walls or the back walls of dwellings were made of huge stone slabs set on edge along with smaller slabs (fig. 21,a,b). Some of these are as much as 1.20 m long and 0.75 m high. Walls were covered with a coat of plaster—the more uneven the surface, the thicker the coat. In some walls the plaster was as much as 0.05 m thick. The mortar used in walls varied from a good lime mixture to probably little more than pure mud. When mud alone served for mortar,it was the coat of heavy plaster that helped to a great extent to solidify the walls. In houses with thatch roofs the walls average about 0.50 m in height when they are foundation walls in which wooden poles were set. In those with beam-and-mortar roofs they probably reached a height of anywhere from 1.70 to 2.50 m from floor to ceiling. The total height of these dwellings from floor to the top of the roof may well have been as much as 3 or 3.50 m. In several buildings the upper façade was found fallen more or less intact. In one, it had risen five courses, 0.60 m, above the beams supporting the roof (p. 192). The highest wall found standing above the floor of a room was 2.15 m. Doorjambs, the ends of walls, and the corners of buildings were often built of well worked stones (figs. 17,g; 18,c,i,k; 19,a-f; 21,c). These occasionally, especially the jambs, were very large (figs. 19,g; 21,e).

Masonry columns are usually found in the large opening in the wall on the front of a house where they help to support the roof. Columns are normally the same width as the walls with which they are in line but may be slightly larger. Some columns are as much as 0.65 m in diameter.

They are all constructed of limestone drums from 0.20 to 0.35 m thick. The drums vary from being carefully dressed and rounded, as in Str. Q-169 (D. E. Thompson and J. E. S. Thompson, 1955, p. 227), to the poorly shaped drums in Str. Q-208 (J. E. S. Thompson, 1954, pp. 71-72). The rougher and more uneven the shape of the drums, the more spalls had to be used in leveling them and the greater amount of plaster on the surface to cover the irregularities. Several examples of columns, both with well cut and poorly cut drums as well as with their plaster surface in place, are shown in the illustrations (figs. 17,f; 18,a-d,f; 19,f-l). Very rarely masonry piers were used instead of columns (figs. 4,a; 5,a,b; 8,n; 14,hh).

There were three ways of making roofs in secular structures at Mayapan: thatch, beam-and-mortar, and corbeled. Thatch was of course the most common type, used in the majority of dwellings. Beam-and-mortar was reserved for the houses, oratories, and shrines of the more important people. The corbeled arch is found only in tombs, except in two vaulted passageways leading into the large groups formed by Strs. R-85 to R-90 and Strs. R-95 to R-99, and in a group shrine, Str. R-89. Beam-and-mortar roofs were built of wooden beams overlaid by thin poles close together to support a cap of mortar 0.15 m or more in thickness. The mortar is a mixture of burnt lime and sascab which sometimes had pebbles and sherds in it. Several courses of stone slabs were used around the edges of the roofs. The corbeled vault in tombs is usually quite rough, consisting for the most part of crude slabs (fig. 22,j). In the tomb in Str. Q-119a the vaults in both ante- and inner chamber are made of slabs and blocks and rise from an irregular offset at the spring to the capstones (fig. 23,l). The doorway between the two chambers has corbels supporting the two stones of the lintel (fig. 23,k). The vault of the passageway into the group formed by Strs. R-85 to 90 is in part of typical Puuc style (figs. 6,c; 21,h; also Proskouriakoff and Temple, 1955, p. 293). The roof of Str. R-89, a group shrine, is a rough stone corbel (p. 200; fig. 6,b).

Floors of terraces and rooms, and the tops of benches, were all constructed in much the same way. The open fill was covered by a layer of pebbles or limestone chips and sascab. The sascab, a form of marl, was mixed with slaked lime, which formed a hard concrete. On top of this a fine mixture was spread to give a smooth plaster surface. The hardness of floors varied greatly, depending on the amount of slaked lime and the purity of the mixture.

The construction of boundary walls was of the simplest; it is described in detail by Bullard (1954, pp. 236-37). Briefly, they consist of large boulders set upright with the edges touching or nearly touching (fig. 22,d,e). The average height was from 0.60 to 1 m. The intervals between the stones were probably chinked with smaller stones. These walls were laid dry, and there is no evidence that they were ever plastered. Of all the boundary walls investigated only three differ from the above description. These, which surround Groups A-3, G-8, and T-18 (fig. 22,i; and Bullard, 1954, fig. 2,c), are formed by a fill between retaining walls.

Types of Buildings and Their Functions

The subject of the functions of the various types of buildings at Mayapan is not only interesting but also important. Without any knowledge of the purpose for which these structures were used it would be next to impossible to reconstruct the life of the inhabitants. Here we are not dealing with the civic and religious buildings found in the principal and smaller ceremonial groups. We are dealing only with dwellings and their associated structures, which include the vast majority of constructions at the site. Among the 4000-odd remains investigated there were of course many that were too far gone for us to be able to tell much about them, and others at whose purpose we could only guess. Of the constructions under consideration we were able to assign definite functions to about 2400. Most of these are dwellings either of the poor or wealthy residents. Others are group altars, group shrines, and oratories. Besides these there are some 1100 platforms of varying sizes, 200 of which had walls along one or two sides. The rest showed no evidence of having supported any construction; many of them probably were used as kitchens. A number of miscellaneous buildings may have served as guest houses, men's or bachelors' houses, or storage places. There are other miscellaneous constructions associated with dwelling groups, such as stone circles, gardens, stelae, and a possible toilet.

Dwellings of the poor or unimportant. The great majority of the population of Mayapan was made up of people of minor or little importance, petty officials, poor relatives, and servants and retainers of the lords and high priests. Their houses were naturally of the simplest type, rarely if ever consisting of more than two rooms, a front room and a back room, divided by a medial wall running the length of the house with one or more doorways leading from front to back. All houses were supported by a low platform. The front of the house was open, there being either no wall at all or only a short wall section at each end. Two or more wooden posts, which helped support a thatched roof, were placed in line with the front wall or, if there was no front wall, with the ends of the end walls. The back room usually had a small exit doorway at one of the ends of the room or in the back wall. Benches are normally found in the front room on either side of the doorway leading into the back room. Although there are variations, the benches usually extend from the doorjamb to the end walls and may be rectangular or L-shaped. The L-shaped ones often extend the whole length of the end wall. In quite a few houses benches also occur in the back room. Many houses have exterior benches or platforms, which may have been used as kitchens, at one end, rarely at both ends. These frequently are an extension of the platform supporting the house. Occasionally these two-room houses have a small altar placed against the back wall of the rear room in line with the doorway (fig. 5,c, Str. S-30c).

Of the 2100 dwellings at Mayapan, only about 50 have more than two rooms. In spite of some variation in plan of these two-room buildings, by and large they conform surprisingly to Landa's description: "The way they built their houses was to cover them with straw ... or with palm leaves, ... And then they build a wall in the middle, dividing the house lengthwise leaving several doors in the wall into the half which they call the back of the house, where they have their beds, and the other half they whitened very nicely with lime.... And this room has no doors, but is open the whole length of the house; ... They had a little door in the rear for the necessary service" (p. 180, quote 5). Wauchope (1938, fig. 35,b) shows a plan of a modern Maya house from the highlands of Guatemala, north of Chichicastenango, that is quite similar in plan to the two-room houses at Mayapan.

Figure 8 shows the plans of dwellings at Mayapan from the simplest to the more elaborate. Here we are interested in only the simpler type. Masonry walls are indicated by heavy black lines and columns by solid black circles. In figure 8,a and b, Strs. R-34d and R-149a, are two examples of the minimum plan. Here there are platforms supporting two benches, which in one plan are rectangular, in the other L-shaped. In neither are any walls showing; evidently the medial wall as well as the back and side walls were made of wooden poles. Structures L-114a, J-86a, and L-59 (c-e) do have a medial wall, but again the side and back walls of the rear room must have been of poles. Structures C-15c and S-122a (f and h) have medial and end walls to the front room but no exterior walls for the rear room. It seems to have been a fairly common procedure to have the exterior walls of the back room made of wood. Structure C-15c has an exterior bench which may have served as a kitchen. Structure S-134b (g) differs slightly in that it has short walls at either end of the front side of the house with two masonry columns between them. It also has end walls to the front room and a medial wall but no exterior walls for the back room. Structures BB-1 and H-30 (i and j), two double-room houses, have walls around the back room. Structures AA-156 and T-53a (k and l) are of special interest because they have rough stone enclosures abutting the rear of the house; these may have served as vegetable gardens or pens for small animals. Structure X-43 (m) has a doorway in the east end of its back room and a wide exterior terrace on both sides, one of which may have served as a kitchen. Structure P-135c (n), although it carried a thatch roof, has masonry piers instead of wooden posts. Structure O-33a (o) is different from the normal plan in that its end walls are well beyond the limits of the benches and medial wall. The masonry column in the rear room is unique. It is 1.10 m high, measures 0.70 m at the base and 0.60 at the top, and is made of five drums. There is no explanation for this column unless it had some religious significance.

Structure AA-155b (p) has a small shrine room extending from the back room. Structure P-143 (q) differs in that the back room is shorter than the front room. It has a bench and a doorway in its north end. Structure Z-147b (s) is the normal plan except that it has a small shrine against the back wall of its rear room. Structure E-26 (t) is unusual in that its back room does not extend the full length of the building. At its south end it has an exterior bench, with a wall along one edge, which may have served as a kitchen. Structures S-133a (u), H-27a (x), and R-196a (y) all have two entrances leading into the back room and a small exit doorway in one of the end walls. Structure H-27a has a wide terrace at its east end upon which the doorway in the back room opens; it was probably a kitchen. Structure S-53a (w) has an unusual plan. Its back room is short, leaving room for a terrace at its east end. This terrace can be reached from either the front or the back room through narrow doorways and probably was used as a kitchen. Structure Q-62 (z; also p. 187; fig. 17,g) has its back room divided into three rooms by secondary walls. The central room, which has a long narrow bench or altar against the back wall, may have served as a shrine room. This building also has a terrace that may have been used for a kitchen. Structures S-96 (bb) and Y-111c (cc) have three and two doorways, respectively, leading into the back room, four benches in the front room, and an exterior bench, possibly a kitchen, at its east end. These last few dwellings are a little bigger and better than the simple two-room house with a single doorway to the back room and two benches in the front room. They probably belonged to people of moderate means.

A few other examples of simple dwellings are illustrated with the groups to which they belong. In Group A-3 (p. 187, fig. 2) there are three two-room dwellings with benches in the front room. Group K-67 (p. 190-91, fig. 3) has two simple dwellings, and a larger house, Str. K-67a, probably belonging to the head of the family. All three houses in Group S-30 (fig. 5,c) are modest dwellings of two rooms. Structure S-30c, the largest and with an altar in the back room, was surely the most important. Groups Z-4 and S-26 each have two simple dwellings (fig. 5,d,f).

Dwellings of the wealthy or important. The more imposing dwellings, which supposedly housed the high priests and lords and more important people, are almost always in a group. As has been mentioned before, most of the imposing groups are in the vicinity of the main ceremonial center. Only rarely is a dwelling of notable dimensions found standing alone, e.g., Str. R-127. The number of really elaborate dwellings at Mayapan are few, probably not more than 50.

There are individual dwellings in various groups that are imposing, but the greatest number of such buildings in a single group are found in the palace-like quadrangle composed of Strs. R-85 to 90 (fig. 6,a). This is truly a palatial assemblage worthy of housing the powerful Cocom family. Two other dwelling groups of similar type, that were not excavated but undoubtedly also had residences of equal elegance, were those composed of Strs. R-95 to 99 and R-102 to 108. In general, however, there was not more than one outstanding dwelling in a group and only a few groups had these.

The features that make a building outstanding from the general run of dwellings are size and the way it is built. The more elaborate examples usually have masonry walls, stone columns, and beam-and-mortar roofs, and more "Puuc"-like stones are used in their construction than in the less important buildings. Also, they may have more than two rooms: occasionally they may have one or more lateral or end rooms, or the rear room may be divided into two or three rooms. When the rear room was divided into three, the central one was generally used as a shrine. Sometimes a single room, which served as a shrine, projected from the center of the rear of the house.

Some of the more elaborate houses are illustrated. The ''palace''-like structure in figure 6 has already been mentioned (pp. 197-201, 218). In figure 8, v, aa, and dd-ii are eight examples of better-type houses. Structure Y-2d (also pp. 194-95 and fig. 18,a), although small, was certainly the home of an important individual. It had a beam-and-mortar roof and masonry columns, an important burial, and two burial vaults. Structure Y-24a has four masonry columns which helped support a thatch roof, and a shrine room extending from the rear of the back room. Structure Q-119a (also p. 186; fig. 17,f) has four masonry columns and three doorways leading into a long back room. The roof was probably beam-and-mortar. Structure R-100 (p. 186) has a shrine room extending from the rear of the house. It originally had three doorways leading from the front to the back room. Structure Q-208 (pp. 188-89) has four masonry columns, three doorways leading into three back rooms, the central one being a shrine room with an altar, and an end room. The roof was beam-and-mortar construction. Structure U-2b has what may have been a small shrine room dividing the back room. Structure Q-244b (pp. 191-92) had a beam-and-mortar roof, masonry columns, a shrine room extending from the rear room, a lateral room at the east end of the building, and two at the west end. Structure Y-1b has a shrine room which extends partly beyond the back wall of the rear room and partly into the rear room.

Other important dwellings of which ground plans are shown are Strs. Q-169, Q-171, J-71b and c, K-52a, Z-4b, and Z-152a and b (figs. 4, 5). Structure Q-169 (p. 196, fig. 4,a) has a complicated plan which has already been described in some detail. Structure Q-171, shown in the same figure as Str. Q-169 and part of the same group, is not nearly so impressive a dwelling but is much larger than the average house (pp. 196-97). Structures J-71b and c (p. 190; fig. 5,a) are both dwellings of importance, but b is the more important of the two, having a shrine room and beam-and-mortar roof. Structure K-52a (p. 186; fig. 5,b) is one of the more pretentious dwellings, with a beam-and-mortar roof, masonry piers, three back rooms, and a shrine room extending from the back of the central back room. Structure Z-4b (p. 188; fig. 5,d) is an example of what was probably the home of a moderately prominent man, for besides being well constructed it had one of the better burial vaults, Burial Vault 15. Structures Z-152a and b (fig. 5,e) carried thatch roofs but otherwise should be included in the upper bracket of dwellings. Both have masonry columns, but Z-152b is the more important, being considerably larger and having what may have been a kitchen at its east end.

Kitchens. There is no mention of kitchens in the early sources, but we do know that in modern times kitchens are either in one end or corner of the house, or in a separate hut, generally behind the house (Wauchope, 1938, pp. 117, 134). In Telchaquillo, Ruppert found that sometimes a house served as a dwelling and kitchen and sometimes separate houses were used as kitchens and shared by all those living within one group (p. 212).

At Mayapan in only a few places was evidence found to prove where a kitchen had been. The most obvious kitchen was Str. R-86a in the ''palace''-like residential group formed by Strs. R-85 to R-90 (pp. 199-200; figs. 6,a; 21,e,f; Proskouriakoff and Temple, 1955, pp. 308-14). Here two hearths were found, one with the conventional three flat stones placed close together. This is the only example with three hearthstones still in place found at the site. It was preserved by the collapse of the beam-and-mortar roof when it was burned at the time of the abandonment of the building. J. E. S. Thompson suggests that Str. Q-208a may have been a kitchen. It is a small platform off the northwest corner of Str. Q-208 (p. 189; J. E. S. Thompson, 1954b, pp. 79-80; fig. 1). Other suggested kitchens are: the court to the west of Str. Q-171, a dwelling (fig. 4,a; D. E. Thompson and J. E. S. Thompson, 1955, p. 232); the west room of Str. Q-165, the east room being an oratory

(p. 195; Chowning and D. E. Thompson, 1956, pp. 433-38); the partially enclosed area at the east end of Str. K-67c, a dwelling (p. 191; fig. 3); the exterior bench at the north end of Str. P-23c, an oratory, which had a quantity of ash and three metates associated with it (p. 192, fig. 11,c); the room skirting the southeast corner of Str. Z-50b, possibly a dwelling (p. 202; fig. 7,a; Pollock, 1956, pp. 533-35); the exterior platform at the north end of Str. K-79c (p. 207; fig. 7,b).

All the objects that one might expect to find associated with kitchens, such as manos, metates, and hearthstones, are easily moved, and except under certain fortunate circumstances, as in Str. R-86a,where two hearths were found, or Str. P-23c with three metates, they have most certainly been removed. Hearthstones once moved would be impossible to recognize, as burnt stones from milpa fires cover the site, and metates, although over 700 were reported, were seldom found on platforms or in rooms. They were strewn around near buildings or re-used in modern walls, sometimes even in ancient construction.

There can be little doubt that all groups must have had at least one kitchen. The author believes that there were two principal types of kitchens at Mayapan, indicated by exterior platforms or benches at the ends of houses, and small separate platforms. More than 260 houses at the site have exterior platforms or benches that could have served as kitchens. Some examples, other than those mentioned above, are shown in figure 8,c, d, f, j, l, q, t, w, x, z, bb, cc, gg, and ii. There are over 700 separate platforms in house groups. Granted that many of these could not have served as kitchens, owing to size or position in the group, many of them could have and probably did. One good example is Str. S-26c (fig. 5,f); here the kitchen would have served both houses in the group. Another example is Str. A-3b (fig. 2), where the kitchen was probably used by the two dwellings within the boundary wall. Structure A-3f, outside the wall, has an exterior platform that could have served as a kitchen.

There is little doubt that kitchens, both of the separate platform and exterior bench or platform type, were roofed, probably, except for a few, with thatch. Not many postholes were found at Mayapan, but two were discovered in the exterior bench at the north end of Str. P-23c, a possible kitchen (p. 192; fig. 11,c). It is likely that when the exterior bench was too wide to be covered by the main roof of the house an extra roof had to be added and supported by two posts as indicated in Str. P-23c. In all likelihood separate platforms serving as kitchens had thatch roofs supported by four posts, the posts being set either in the ground or in the platform, depending upon its size.

Oratories. Bishop Landa, discussing the religious buildings of the Maya, says that besides their community temples the lords, priests, and leading men had oratories in their houses where they worshipped in private (p. 181, quote 7). Worship in dwellings before altars and shrines and in shrine rooms is taken up later under the heading Superstructures. Family worship was also carried on in the group outside the house before group altars and group shrines and in oratories. For the moment let us consider the family oratory or chapel, a separate building in the group. D. E. Thompson and J. E. S. Thompson (1955, pp. 237-42) discuss this question of family worship and point out how it became more important during the Mayapan period at the expense of community worship in the religious centers.

Family oratories, of which there are about 50 at Mayapan, are usually single-room structures, although four have an adjoining room. They may have thatch or beam-and-mortar roofs, wooden or stone columns. Of the 50 about a dozen had beam-and-mortar roofs and 20 had masonry columns. In four, columns were placed inside the room. When they occur in the wide opening in the front wall there are always two, dividing it into three entrances. The same was probably true where wooden posts were used. There are a few examples of exterior benches that served as kitchens. Inside benches usually extended around three sides of the room, but sometimes they were placed only against the length of the back wall or against the back wall and one end wall. Two oratories had no benches. Occasionally a doorway was found in one of the end walls (fig. 11,c,d).

An important feature common to all oratories was a sacred place against the center of the back wall or in the center of the bench extending along the back wall. This took the form of an altar against the back wall or a niche with or without an altar in it in the center of the bench. Occasionally there was a dais or platform in front of the altar (figs. 4,a; 11,g). Ossuary cists frequently occur in oratories and are usually below the floor in the center of the room in front of the altar (fig. 11). Often the nature of objects found on the floor or benches of these structures helps to identify their religious purpose. In Str. R-91, out of 539 identifiable sherds, 403 were of censers; in Str. Y-8b, out of 745 in the altar room 494 were of censers. The remains of stucco feet indicating that two figures had been seated on the altar in Str. R-91 are an added proof if any were necessary (fig. 18,g).

No single feature mentioned above necessarily identifies a building as an oratory, but a combination of several of them does. The eleven examples of oratories in figure 11, and Str. Q-172 (fig. 4,a) and Str. K-79b (fig. 7,b), show most of the features found in this type of religious building. Photographs of some of these oratories and their altars may be seen in figure 18,b-d, g-j. The oratories with more than one room are Strs. Y-8b (fig. 11), Str. K-79b, Str. Q-172, and Str. Q-165 (p. 195; Chowning and D. E. Thompson, 1956, pp. 433-38, fig. 1). It has been suggested that the extra room in Str. Q-165 was used as a kitchen for those participating in special rites, and that in Str. Q-172 took care of housing participants, men only, during their period of seclusion before and during special religious ceremonies. The extra room in Str. Y-8b (fig. 11,h) and Str. K-79b (fig. 7,b) projects from the center of the back wall and served as a special altar room. The altar in Str. Y-8b has re-used Puuc "spools" at the corners (fig. 18,h). No altar is shown in the little back room of Str. K-79b, but it probably had one. This structure, which had a fallen beam-and-mortar roof, was not excavated, and the altar could well have been covered by the debris.

Of the plans of oratories illustrated, 7 had beam-and-mortar roofs, Strs. K-79b, Q-172, and, in figure 11, Strs. R-142c, R-126a, R-91, P-28b, and Q-37a. Notice that although Strs. P-23c and Z-22c have masonry columns they had thatch roofs. The presence of stone columns inside the building is difficult to explain. They certainly were not needed to support the roof, especially not for Str. P-23c, which had a thatch roof. Here only a single column was found in the room, but possibly the other was removed for the building of a near-by modern wall. It is likely, and their position on either side and a little in front of the altar or niche would indicate it, that they supported the roof of some interior construction such as an inner sanctuary. The small altar rooms extending from the rear of Strs. Y-8b and K-79b indicate that inner shrines, for the setting apart of the altar, were used. Examples of exterior benches which probably served as kitchens for those who were seeking seclusion in the oratories may be seen in figure 11,c, d, h, and j. Figure 11 also shows about all the variety of positions occupied by benches in oratories. Notice that in two structures, Z-22c and R-91, there are no benches. The same figure gives plans and sections of the various types of altars used and how they are often set in niches. In Strs. R-126a and P-28b, masonry walls project from the back wall on either side of the altar, giving it extra seclusion.

Group altars. We found about 80 group altars at Mayapan, but presumably there were more. They have been called group altars to indicate that they are separate constructions and to avoid confusing them with altars located in buildings. Probably group altars were used by all inhabitants of the group. They are usually placed in the center or on the edge of the court upon which the buildings forming the group face, and normally are centered on the most important dwelling (figs. 3, Str. K-67d; 5,d, Str. Z-4d).

About three-quarters of the group altars found are small platforms, either rectangular or square, and averaging anywhere from 1 to 2.5 m wide and from 1 to 4 m long. About one-quarter of them had a wall along one side and may have rested upon a larger platform. Some examples may be seen in figure 12,a-g.

It is very likely, but impossible to prove, that the group altars once supported small structures of perishable materials and were in fact group shrines, to be discussed next. A unique altar was found in Group AA-31 in the middle of the court centered on the main dwelling. It is a solid, round, drum-shaped stone 0.65 m thick and 0.70 m in diameter. Around the center is a 0.15-m band which projects 0.03 m.

Group shrines. Some 40 group shrines, small individual structures on a platform, were found. Like group altars they are usually placed in the center of the court, or on the edge, and were centered on and faced the most important structure in the group, either dwelling or oratory. An example of the last is the group shrine, Str. Q-170, in figure 4,a, which faces Str. Q-172, an oratory. Examples of group shrines facing dwellings are shown in figure 5,a-c,e. The group formed by Strs. R-85 to R-90 is unusual in that it has three group shrines, Strs. 85a, 89, and 90 (fig. 6). Various plans of group shrines may be seen in figure 12,h-t. In all but one, group shrines have only one small room. The exception is Str. K-52c, which has two rooms (p. 187, fig. 5,b). Of the 40-odd group shrines found we know that two, Strs. R-85a and Q-170, had beam-and-mortar roofs, and one, Str. R-89, had a corbeled roof (p. 200; fig. 18,f). Certainly the majority had roofs of thatch and their walls did not rise more than 0.50 m above the floor. The platform supporting Str. Q-170, the group shrine mentioned above, is decorated on all four sides with series of three X-shaped stones of Puuc-style workmanship alternating with areas of plain stones (figs. 4,b and 18,e).

Bishop Landa, after discussing the making of idols of wood, says, "they took them from the little house and placed them in another arbour, built for the purpose in the yard" (p. 181, quote 8). The group shrines at Mayapan may well have been these little houses or "arbours" mentioned above and served as repositories for idols. Certainly most were too small to have been used for much else.

Miscellaneous structures. There are some 1500 structures at Mayapan that cannot be assigned any definite function. About 350 of them are not in groups. Most of them, about 1100, are platforms; others are remains too fragmentary to do more than record; and about 80 are constructions in a fair or good state of preservation. The last fall into several categories, houses that face two ways, possible oratories, possible men's houses, structures that may have been for storage, workshops, stone circles, gardens, and what may have been a toilet.

First let us consider the 1100 platforms, 900 of which are simple platforms of all sizes that have no trace of ever having supported a superstructure, at least with any masonry connected with it. Certainly many if not most of them carried some sort of wooden construction, possibly no more than four posts and a thatch roof. As no postholes were found, nothing can be said about what kind of buildings were on them, and we can only assume that they could have been used for such purposes as storage, kitchens, workshops, or, as Landa mentions, to keep servants or to house people coming to town on business (see p. 179, quote 2). The 200 remaining platforms of the 1100 did support walls; about 120 had a single wall along one edge or down the middle, and about 80 had two walls (fig. 13). As for function, any of the ones mentioned above could apply.

Among the 80 constructions that were in fair or good state of preservation there is a type of building that faces two ways. It has an unusual plan that is rare at Mayapan, only six having been found. With one exception, Str. Z-50a, it occurs in groups that were definitely domiciliary. Group

Z-50, as was mentioned on page 201, was probably a place for the occupants of the group formed by Strs. R-95 to 99 to retire to during certain religious rites. Of the six structures that face in two directions, five (Strs. J-71a, fig. 5; Z-50a, fig. 7,a; S-70c and Z-39f, fig. 14,ee,ff; and Z-37a, not illustrated) have, except for arrangement of benches and an end room in one, almost identical plans, consisting of two rooms separated by a medial wall with a doorway. Each room is entered by a two-column doorway, and the buildings face east and west, except for Str. S-70c, which faces north and south. The sixth building that faces two ways, Str. S-133b (fig. 14,hh), has a somewhat different plan from the others; it has three parallel rooms instead of two, and there is no direct access from one front room to the other. Also it has an end room and an altar against the back wall of the middle room. Three of these buildings had beam-and-mortar roofs (Strs. J-71a, S-70c, S-133b). Three had thatch.

The function of this type of structure is unknown. It hardly has the privacy one would expect in a family dwelling. It has been suggested that it may have served as a place to entertain visitors or to carry on some minor ritual. The altar and a small plaster block with a pottery bowl set in it, which was probably used for burning copal, projecting from the center of the platform on the east side of Str. S-133b, certainly indicates that the building was used to some extent for religious purposes (p. 194; figs. 14,hh,6; 20,a).

Some of the better-preserved miscellaneous structures are shown in figure 14. None of them, with the possible exception of Str. M-149a (gg), a large structure of unique plan, was a dwelling, but there is little doubt that c-d, h-l, t, y, and possibly u and v were oratories. Some excavation would verify the function of most of these. The function of Str. A-1 (fig. 12,u), a small, single-room structure standing alone outside the city wall, is a problem. It has nothing to indicate its use as a shrine except its size. Possibly it was used for religious purposes by the inhabitants of Group A-2, although they had their own group altar.

During our survey of Mayapan we were constantly on the lookout for bachelors' or men's houses, houses which, according to Landa, were large and open on all sides where young men could gather for their amusements as well as live until they married (p. 181, quote 9). Two possible structures that could fit Landa's description were found, Q-116 and Z-146 (see map). Both are large platforms with a number of column drums near the edges. No other evidence of superstructure was visible. These large platforms may have supported large, open buildings consisting of columns and a thatch roof. It has been suggested that possibly the colonnaded halls, most of which occur in the main ceremonial center, may have been bachelors' or men's houses. Two such buildings, Strs. K-79a and Z-50c (fig. 7,a,b), are, however, in groups that may have served as retreats for the inhabitants of certain dwelling groups during special rituals (p. 207). In the main ceremonial center colonnaded halls sometimes have a dwelling-type structure directly behind them, which supposedly housed attendants and caretakers for their maintenance. This question of the association of colonnaded halls and dwelling-type structures is discussed by Proskouriakoff (1954, pp. 268-69).

Special structures were surely built for storage. Thompson and Thompson suggest that Str. Q-173a (fig. 4,a) was used to store the produce that, according to Bishop Landa (pp. 179-80, quote 2), the caluac or overseer brought to his lord and that the small dwelling in front of it, Str. Q-173, may have housed the overseer (D. E. Thompson and J. E. S. Thompson, 1955, p. 244). Another possible storage room is Str. R-86b (p. 201; figs. 6,a,16; 21,g). Also, as was mentioned above, many platforms may have supported structures of perishable materials that served as storage places.

One would expect to find evidence of workshops at Mayapan, but little could be found that indicated certain structures to have been used by any particular class of artisans. Proskouriakoff and Temple mention that the quantity of stone tools found in the colonnade on the terrace back of Str. R-86 suggests some sort of workshop (fig. 6,a; Proskouriakoff and Temple, 1955, p. 308).

Another form of construction found near or within a house lot is stone circles from 2 to 5 m in diameter and from 0.60 to 1 m high (figs. 14,ii-kk; 22,a and b). Seven of these circles were discovered. They are made just like the boundary walls, large slabs set on end with the spaces between chinked with smaller stone. They may be circular or oval, and some have no gap that might serve as an entrance. There was no clue to their purpose, but it is possible that they may have been used for pens for small animals, especially if their height were increased with the aid of poles set in the walls; or, if they were filled with soil, as Bullard suggests (1954, p. 241), they could have had trees or other vegetation planted in them. The badly disrupted circle of stones in Group A-3, although larger, may have had some such function (fig. 2, A-3e). Possibly serving the same purposes as those suggested for circles are a few slightly larger enclosures abutting the rear of dwellings (fig. 8,k,l).

A chultun-like cavity in the terrace south of Str. Z-50c (fig. 7,a) presents a problem as to its purpose. It could never have held water. Pollock (1956, pp. 540-41) suggests that it might have served as a drain, a receptacle for refuse, or a toilet. Just what the disposal system at Mayapan was is unknown, but there must have been some system. Middens or refuse dumps which contained remains of animal, bird, and fish bones have been found near dwellings. But just throwing refuse out would not solve the problem. Today in Techaquillo the buzzards, dogs, and pigs dispose of all refuse. Possibly the same was true in ancient times. The people certainly had dogs and buzzards and could have had pigs, for the wild peccary is easily tamed. Every family in Telchaquillo has one or more pigs for this very purpose. They are a necessity, there being no toilet facilities. The boundary walls could have served the added purpose of keeping one's pigs at home.

Stelae are not normally thought of in connection with dwellings, but there are four stelalike stones that are associated with them. These possible monuments are from 0.60 to 0.90 m high, and three are centered on dwellings, Strs. J-75a, Z-95, and Z-181. The fourth is centered on Str. Q-125a, a possible oratory in a house group. All these stones are without carving but are shaped.

Substructures

Terraces and platforms. Although the terms terrace and platform are more or less interchangeable—each can mean a raised construction with a flat surface—in this report platform refers to the low construction upon which a building stands, and which forms the floor of the building, whereas terrace refers to the large base or foundation supporting a building and its platform or a whole group of buildings. A group terrace may have smaller terraces on it that carry houses and their platforms.

It has already been mentioned that the most desirable locations for houses were on the tops of the many hillocks and natural rises that are scattered over Mayapan. There is evidence that these natural vantage points, which range in height from about 1 to 4 m, were faced with large, rough stones and leveled off by filling in behind to make terraces, some of which supported individual houses and others groups of buildings. Several terraces were enlarged by adding retaining walls and filling in behind. The terrace supporting Group K-52 is a good example, having been enlarged at least four separate times, the final addition, on the southeast corner, probably being under construction when the group was abandoned (fig. 5,b,1). Frequently where pits were sunk in terraces a fill of loose rock was encountered. Figure 22,g shows some exceptionally large stones used in terrace walls. Sometimes a terrace supporting a group had one part higher than another, the most imposing dwelling being built on the upper level (fig. 3).

All dwellings, oratories, group shrines, or other buildings associated with dwellings were built on low platforms anywhere from 0.15 to about 0.80 m high (figs. 17,f,g; 18,a-f). Sometimes the front is faced with nicely cut Puuc-style stones (fig. 17,f). The fill in platforms is usually of loose stones varying in size, the smaller stones being at the top. Platforms are almost always of one level, there practically never being a step up from the front to the back room of a house.

Stairways. As many of the dwellings were on relatively high terraces, stairways played an important part in the architecture. They took various forms, some being inset, some projecting, some flanked by balustrades. The large terrace supporting the group formed by Strs. R-85 to 90 had stairways on four sides, but they are narrow affairs rather than wide and imposing as one would expect to find with such an elaborate dwelling group. The stairways inside, leading from the court to the tops of the inner terraces, are much more impressive. Two of these are wide and inset, and one has balustrades with a slightly overhanging vertical upper zone (figs. 6; 20,e-g).

Most stairways leading to the tops of large terraces supporting groups were in a very poor state of preservation, but a few were in fair condition. The terrace supporting Group K-52 has two stairways. Both have balustrades; one projects from the terrace wall, the other has one side projecting (figs. 5,b; 20,h). The terrace supporting Group Z-152 has an inset stairway (fig. 5,e). The stairway on the north side of the terrace supporting Str. Q-169 projects and is flanked by square block balustrades (fig. 4,a). In Group K-67 an inset stairway leads from the court to the top of the upper terrace (fig. 3). Figure 7,a shows four stairways leading to the top of the terrace supporting Group Z-50. Two of them have balustrades. The platforms supporting houses, if more than 0.30 m high, have several steps, usually centered on the main entrance. The steps may project, with or without balustrades, or be inset (figs. 3, Str. K-67; 5,b, Str. K-52a; 7,a, Str. Z-50b; 8,d,cc).

Interior stairways, except the stairway at the end of the vaulted passageway between Strs. R-86a and R-87 (fig. 6), are confined to tombs. There was no evidence of a house having a stairway giving access to a beam-and-mortar roof. The two best stairways in tombs were in Str. Q-169 (figs. 4,a,1; 23,g) and Str. Q-119a (figs. 16,a; 23,j). Several burial vaults and crypts have two or three steps of roughly cut stone leading down to them (fig. 14,hh). Two tombs had very crude steps, for the most part cut out of the bedrock (fig. 16,e,f).

Floors. Although most of the floors that surfaced the terraces supporting groups had disintegrated, enough remained to indicate that the courts around which the dwellings were grouped were paved; probably, many whole terrace tops were paved. The only floors found in good condition were under debris, as from a collapsed beam-and-mortar roof, or below later floors.

In houses floors do not normally go under walls, benches, or altars unless those constructions are secondary. Usually floors slope slightly from the back room toward the front, probably for drainage purposes. In several dwellings what appear to be drains were found in the floors of rooms (figs. 5,a,1; 6,a,7; 14,hh,1). They were made by burying the pottery neck of a jar so that the rim was about at the level of the floor and bringing the plaster up to the opening. Other drains found in floors but not in dwellings occur in the northeast corner of the areaway in front of Str. R-89 (Proskouriakoff and Temple, 1955, pp. 300, 303) and in the terrace south of Str. Z-50c (p. 202; fig. 7,a).

Superstructures

Walls. The general features of wall construction have been discussed under the heading Masonry. We know that the masonry walls of houses with beam-and-mortar roofs were smoothly plastered inside and out. According to Landa, the Indians made a liquor from the pounded bark of certain trees which was used for polishing and hardening plastered walls (Tozzer, 1941, p. 198). We also know that walls rose vertically from the platform supporting them without a basal molding. The only upper façade left intact was a three-member molding on Str. R-89, a group shrine (figs. 6,b; 18,f). It is possible that houses with beam-and-mortar roofs had some such upper façade. We do know that there were as many as five courses of stones above the wooden lintels over the front entrance to Str. Q-244b (p. 192).

No evidence is left to tell us just how the upper walls of houses with low masonry foundation walls were built. In figure 9 one possible reconstruction is shown. Here the walls are made of thin poles set in the foundation walls and fastened to the pole plates. They were then covered inside and out with a layer of mud mixed with chopped grass, which in turn was smoothed and then painted with white lime. As the mud walls presumably were not as thick as the foundation walls a molding or ledge would be left both inside and outside the house.

One of the Relaciones mentions the use of mud (p. 183, quote 18), and Landa says that the walls were whitened (p. 180, quote 5; and see J. E. S. Thompson, 1938, p. 599). Present-day houses with pole and mud walls are covered with a mixture of slaked lime and binding materials to strengthen and preserve them. Of course many of the houses may not have had the poles forming the walls covered with mud. Some of the Relaciones say that the houses were made of poles and straw roofs because they were healthier to live in, and they do not mention mud walls (pp. 182-183, quotes 15 and 16). In the Relación de la Villa de Santa is the statement that "the wind penetrates and blows through them with much ease, because they leave them open all around like lattices and cannot shut them up nor plaster them because of the great humidity" (p. 183, quote 19). It is likely that both types were used. Figure 17,d is a picture of a modern house at Rancho San Joaquin with stone foundation walls and the upper walls of poles.

The medial wall in houses with beam-and-mortar roofs undoubtedly rose to the ceiling. In houses with thatched roofs it presumably went no higher than the crossbeams and was little more than a screen between the front and back rooms (fig. 9,a).

Columns and masonry piers. Only a little more than 100 dwellings and buildings associated with them have stone columns, of which about 90 are in groups. About 10 structures have masonry piers (figs. 5,a, Strs. J-71b and c; 5,b, Str. K-52a; 8,N, 14,hh). Of these buildings with stone columns or masonry piers, less than half, roughly 50, had beam-and-mortar roofs, and so there were quite a few that had thatch roofs and pole walls. Columns in the front doorways of houses almost always are in pairs or fours. An exception is Str. Z-28f (fig. 14,w). Here there are two columns but they are separated by a masonry pier or wall section. Single columns occur once in a while in side or back openings in buildings (figs. 4,a, Strs. Q-169, Q-172; 5,a, Str. J-71a; 6,a, Str. R-86; 7,a, Str. Z-50b; 8,ff, hh).

Interior columns have already been mentioned as occurring in some of the oratories. They also are found in Str. M-149a (fig. 14,gg), in Str. O-33a (fig. 8,o), and in Str. R-86a (fig. 6,a).

Doorways. The outer doorways of buildings with beam-and-mortar roofs were certainly spanned by wooden lintels, but occasionally stone lintels were used in small doorways (p. 200; Str. R-89, figs, 6,b; 18,f). The doorway into the inner chamber of Burial Vault 9 is corbeled (p. 248; figs. 16,a; 23,k). The average dwelling at Mayapan had three doorways or entrances in the front formed by two posts, stone columns, or masonry piers placed in the wide opening, a doorway leading from the front room into the back room, and a small exit doorway in the back room. As far as we know, there is only one dwelling having its front divided into an even number of entrances, and this is a two-room building, Str. S-130b, which has a single column dividing the opening in front into two entrances (see map). Structure Z-28f (fig. 14,w), a building of unknown function, is unique in having four entrances in front. All the rest have either three or five entrances. Sometimes in the side or back of a dwelling, as already mentioned, there is an opening divided into two entrances by a single column (figs. 6, Str. R-86; 7, Z-50b; 8,ff,hh). In oratories and other structures associated with dwellings this use of a single column occurs once in a while (figs. 4,a, Str. Q-172; 5,a, Str. J-71a; 14,p).

There may be one, two, or three doorways in the medial wall, and occasionally there is a doorway in one or both ends of the front room. It is likely that most back rooms had a small exit doorway, more often in an end wall than in the back wall as the back wall of a dwelling is frequently right on the edge of the terrace supporting the group. In many buildings where there are foundation walls for a back room there is no sign of a doorway. These walls are not so high, however, that a doorway in the wooden walls they support would have been impractical. On the other hand, some dwellings that supported beam-and-mortar roofs and had high walls in the back rooms had no rear doorways (figs. 4,a, Str. Q-169; 8,ff,hh). Almost always the jambs of doorways are well cut stones set on end, some of them reaching as much as 1.50 m in height (fig. 19,g). In Str. Y-2d the jambs were made of several stones laid up horizontally (fig. 18,a).

Cordholders. As far as is known the Maya had no doors. They seem, however, to have used some sort of curtain to close doorways. Landa says that "as (the houses) had no doors, they considered it a grave crime to do harm to the houses of others" (p. 180, quote 5). Clavigero, writing about ancient Mexico, describes how the Indians covered their doorways with little reeds to which they attached something that would make a noise when moved (p. 184, quote 21). This is not unlike the idea of the bell on a spring in the village store.

In many Maya buildings there are various types of cordholders on either side of doorways that presumably were used to fasten curtains at the top and bottom (Tozzer, 1941, note 913; A. L. Smith, 1950, p. 78). At Mayapan cordholders were found in Str. S-133b in the front and central rooms. In the central room on either side of the doorway there were cordholders set in the floor similar to those shown in figure 20,c (fig. 14,hh,2). All that protruded above the floor was the end with the hole. Two stones that probably were cordholders, found on the floor near by, presumably fell out of the wall above those set in the floor (fig. 20,d). Two more cordholders were found in the east room (figs. 14,hh,3; 20,c). A cordholder similar to the two shown in figure 20,c was in the fall in Str. Y-2d (A. L. Smith and Ruppert, 1956, fig. 9,r), and two others came from wall debris of the rear rooms of Str. R-87 (Proskouriakoff and Temple, 1955, fig. 15,1). The one shown in figure 20,b came from Str. Q-208. D. E. Thompson and J. E. S. Thompson (1955, p. 227) mention a different type of cordholder, a hole through the inside corner of a doorjamb in Str. Q-169.

Wall depressions and openings. Other than the niche or recessed area for an altar in the center of the back wall of Str. P-14a, an oratory (fig. 11,b), and two niches in the south wall of Str. R-86b, a possible storage place (figs. 6,a,16; 21,g), no depressions were found in the walls of dwellings or their associated structures (but see below). Drains through walls at floor level and small vents occur in buildings in other Maya areas, but none was found at Mayapan. Windows are rare but do occur occasionally. In the west wall of Str. R-87 (figs. 6,a; 21,f) and in the south wall of Str. R-86 there are openings big enough to have served as windows. As they both communicate with the kitchen, Str. R-86a, it has been suggested they were used to transmit orders (Proskouriakoff and Temple, 1955, p. 309).

Benches. All dwellings had benches in the front room. This was standard. Benches may also occur in back rooms and are frequently found outside dwellings, at either end, where they may have been used as kitchens. About 250 houses had benches in the back room, and more than 260 had exterior benches. They are either rectangular or L shape, and although they usually are placed on either side of the doorways in the medial wall there is a good deal of variation (fig. 8). In two buildings benches supported narrow walls at one end (figs. 8,hh; 14,hh). The average height of benches is between 0.30 and 0.50 m. They are often faced with well cut Puuc-like stones and occasionally have a molding along the upper edge projecting a few centimeters from the face (figs. 8,ff; 14,hh; 19,d-g).

Landa says that the front of the house was for the reception and lodging of guests and that the rear room was for sleeping, except in summer when the whitened, front part was used for sleeping, especially by the men. He also says that they slept in beds made of small rods with a mat on top (p. 180, quote 5). There is little doubt that when benches occur in the back room mats were placed on them and they were used to sleep on, and when the men moved into the front room in summer they moved their mats to the benches there. The front room, being much less private than the rear room, would naturally be used more for sleeping by the men, as Landa suggests, than by women. Benches also occur in the buildings that face in two directions, which, as mentioned before, may have served as places to lodge important visitors. With a few exceptions, benches are found in oratories (fig. 11).

Niches were found in the faces of benches in several oratories and in one house (figs. 8,dd,2; 11,c,2, f,1; 18,b,j; 19,c).

Altars. Besides being in oratories (figs. 11; 18,b-d,g-j), altars occur in dwellings, where they are usually placed against the back wall of the back room in line with the doorway. Some 100 dwellings have altars that are not in separate shrine rooms. They are usually in the less elaborate houses, about 70 being in houses with only a front and back room. D. E. Thompson and J. E. S. Thompson (1955, p. 242) point out that it was not considered correct to have an altar in the living quarters but that it may have been all right for poor people who could not afford a separate room or building to house a family shrine.

It is possible that many more dwellings may have had altars that have disappeared, especially in those that had the back wall made of wooden poles without a masonry foundation wall. It is also possible that altars were made of wood as well as of masonry. Altars can be distinguished from benches by their position in the room and their size. If a platform is placed against the back wall of the rear room, centered on the doorway, and is too small for sleeping on, it is fairly certainly an altar.

Shrines. Shrines, like altars, in dwellings are placed against the back wall of the back room. They are little chambers, much too small to enter, formed by walls extending into the back room from the rear wall. The front wall of the shrine has a small doorway in the center in line with the doorway in the medial wall of the house, and the shrines probably had stone or thatch roofs. There are only a few, about 10, of these shrines, miniature rooms within a room, which were probably used to house family or household idols (fig. 8,s). The little room in the back room of Str. U-2b (fig. 8,gg) would probably fall into the shrine category.

Shrine rooms. There are about 30 houses with a room set aside for family worship. These have been called shrine rooms. Twenty-three of them extend from the rear of the dwelling and are entered through a doorway in the back wall of the rear room in line with the doorway into the front room and central doorway of the building. Shrine rooms were also formed by dividing the rear room into three, the central one being the shrine room. This was sometimes done after the building was finished by putting in secondary walls (fig. 8,z,ff). One shrine room extended part way into the rear room and part out (fig. 8,ii).

Shrine rooms are not difficult to identify, as they are always centrally placed in a dwelling and almost always have an altar, or narrow bench that served as an altar, or sometimes both, the altar being placed in the center of the bench (fig. 8,z,ff). In a few shrine rooms no altar was found, but from the position and size of the rooms there could be no question as to their function (fig. 8,p, aa,ii). Also the objects found on the floors of shrine rooms leave little doubt as to their use (J. E. S. Thompson, 1954b, pp. 74-75; A. L. Smith and Ruppert, 1956, p. 482). Landa mentions the fact that the lords, priests, and leading men had places in their houses where they made their prayers and offerings in private (p. 181, quote 7). For examples of shrine rooms in dwellings see illustrations (figs. 5,a, Str. J-71b; 5,b, Str. K-52a; 6,a, Strs. R-86, R-87; 8,p,aa,ee,ff,hh; 18,k; 19,b). The middle room of Str. S-133b (fig. 14,hh), a building of questionable function, was certainly a shrine room. Not only did it have an altar against the back wall but much ash and many sherds of censers on the floor (A. L. Smith and Ruppert, 1956, p. 490).

Roofs. We have seen, under Masonry, that three kinds of roofs were used in dwellings and their associated structures at Mayapan: corbeled, beam-and-mortar, and thatch. As only a few were corbeled (p. 216) and only about 50 were beam-and-mortar, the vast majority were of thatch. About 100 dwellings had masonry columns; about half of them had beam-and-mortar roofs and half roofs of thatch. Beam-and-mortar roofs were always supported by stone walls and masonry columns or piers, never by wooden posts. Ordinarily there is little difficulty in telling whether a house had a thatch or a beam-and-mortar roof. With a beam-and-mortar roof the fall covers the benches and protects the floors so that they still have a good plaster finish; with a thatch roof there is little debris, benches clearly show, and floor surfaces are eroded away.

Landa says that the roofs were made of straw or palm leaves and had a very steep slope so that the rain would not penetrate, and that the slope came down very low in front (p. 180, quote 5). Other Relaciones mention the use of straw or palm leaves, and state that roofs made of good material would last twelve or fourteen years (pp. 182-83, quotes 16-19). Clavigero mentions the use of hay (p. 183, quote 20).

Figure 9 shows the reconstruction of the walls and thatch roof of a dwelling at Mayapan, Str. Z-152a. This building had low foundation walls and stone columns. There are quite a few different ways in which one might reconstruct the walls and roofs of dwellings, but the method shown in figure 9 seemed to be logical. Here the walls are of poles covered with mud. The main posts are set inside the walls, there being no evidence of their having been set in the walls and in many buildings this would have been impossible on account of the masonry construction. The roof structure supported by the main posts is high to give a good slope to the sides. Wauchope (1938) describes in detail the many ways of making modern Maya houses.

Decoration

Dwellings, especially of the more elaborate type, had both interior and exterior decoration, but unfortunately very little evidence is left to show just what it was. The most elaborate exterior decoration found on a dwelling was on the façade of Str. R-87, where the walls were decorated with re-used sculptured stone elements of masks (Proskouriakoff and Temple, 1955, pp. 293-94). Landa mentions that the houses of the lords had their walls painted with great elegance (p. 180, quote 5). Evidence of polychrome painting on plaster was found on exterior as well as interior walls of buildings in the same group as Str. R-87, and so were pieces of modeled stucco that were probably from stucco statues inside buildings. Structure R-91, an oratory, had the remains of stucco figures seated on its altar (fig. 18,c and g). One of the benches in the front room of Str. Q-208, a dwelling, was decorated with pairs of engaged colonnettes of the type called "spools," a typically Puuc decorative element (fig. 19,e; J. E. S. Thompson, 1954b, p. 74). The exterior decoration on Str. Q-170, a group shrine, has already been mentioned (p. 222; fig. 18,e), as has the altar in

Str. Y-8b, an oratory (p. 195; fig. 18,h). Some columns were decorated with carvings. One of the columns in Str. Q-113a, a dwelling, had a lizard carved on it, and one in Str. R-91, an oratory, had what appears to be a jaguar head (fig. 19,l). Structure Z-8b, a dwelling, has monkeys carved on stones that were probably doorjambs. A carved stone alligator head with a tenon was found in the fall of Str. J-71b, an elaborate dwelling with a beam-and-mortar roof. It may have been in the upper façade. Other decoration would, of course, be on the upper façade, which may have had a simple rectangular or two- or three-member molding. The last form of molding occurs on Str. R-89 (p. 200; figs. 6,b; 18,f) and simple rectangular molding on benches (p. 228; fig. 19,d-g).

Distribution of Mayapan-Type Dwellings

After the first two seasons' work at Mayapan the plans of dwellings and their associated structures became quite familiar, especially the plan of the simple dwelling with front and back rooms which so closely follows Landa's description of the houses of the common people (p. 180, quote 5). With our knowledge of houses at Mayapan thus fairly well established, the area around Mayapan was explored to a radius of about 20 km. We were primarily interested in the Mayapan type of dwelling, and so the area of the survey was limited to the apparent extent of that type. By the time dwellings similar to those at Mayapan had run out in all directions a total of 111 distinct groups or settlements had been examined. These, for the most part, were found near cenotes. The survey showed that at only two sites were there houses of recognizable Mayapan types as far as 12 km away. These were the sites of Itzin Can and Xtuki Ch'en, both to the northwest. In all other directions Mayapan house types disappear within 3 or 4 km (Ruppert and A. L. Smith, 1957).

Besides the above survey, more distant sites, Uxmal, Kabah, Sayil, Chichen Itza, and Chacchob, were visited with the same purpose in mind (Ruppert and A. L. Smith, 1957). During the several weeks spent investigating the Puuc sites of Uxmal, Kabah, and Sayil, 33 houses were examined and drawn to scale at Uxmal, and 14 each at Kabah and Sayil. The houses at all these sites, as at Mayapan, were found associated with ceremonial groups as well as away from them. With the exception of a type of long, single-room structure at Uxmal (Ruppert and A. L. Smith, 1957, fig. 3,d,e), they differed in plan from the Mayapan house structures. The Puuc dwellings are single-room buildings, each with a doorway in one wall, or structures of a series of adjoining single rooms each with its separate doorway (fig. 10,a-e,g,i).

Eleven days spent at the ruins of Chichen Itza were occupied in searching a large part of the mapped area as well as some terrain slightly off the map. Forty-three houses were found in good enough condition to yield plans. These were found on low, flat ground and on large platforms, many of which border sacbes. The most common house type is the same as at Uxmal, Kabah, and Sayil, but at Chichen Itza the majority of rooms had benches. The various types of house plans encountered may be seen in figure 10. Of all the buildings examined at Chichen Itza only one (fig. 10,n) can truly be said to resemble the typical house of Mayapan with front and back room. Wauchope found two at Chichen Itza which also bear a resemblance to the Mayapan type in that they have a front and back room (fig. 10,p,q).

During a week spent at the ruins of Chacchob, a small walled city, the greater part of the area within the wall was explored. Only about 20 dwellings, most of which were on large platforms, were found. It was thought that there probably never were more than 50 house structures here at the time of the occupation, a much smaller concentration of dwellings than at Mayapan, where in the same area there were from 250 to 300 houses. Most of the buildings were in poor state of preservation, but enough remained to show that they were of the Uxmal-Kabah-Sayil type (fig. 10,f).

Other than the houses within a few kilometers of the site and the three possibilities at

Chichen Itza the only dwellings that are similar to those at Mayapan are at the walled city of Tulum on the east coast of Quintana Roo. There, along the main street, which runs north and south between two gateways in the Great Wall, were congregated the residences of the nobility (Lothrop, 1924, p. 67, plate 25). In plan, some of these buildings are strikingly like the houses of the lords at Mayapan. The following is Lothrop's description:

> "Here may be seen five large edifices of stone, as well as many platform mounds on which may have stood houses of more perishable materials. Four of the stone structures are of the type known as palaces. Their doorways are wide and divided by several columns. Within are two long, narrow rooms with smaller rooms on one end. In the center of the back room is a small sanctuary or shrine, showing that even in his home the Maya noble was unable to escape the all-pervading influence of religion. The roofs of these buildings were of wooden beams overlain with rubble, and all have fallen, owing to the decay of the wood" (Lothrop, 1924, p. 67).

Lothrop (1924, figs. 77, 80, 87, 95) shows individual plans of these structures, 20, 21, 25, and 34, as well as the plans in his plate 25. Structures 20 and 34 are the most typically Mayapan. The plans of these buildings do not show benches, probably because they were covered by debris from the collapsed roofs. The plans of Strs. 27 and 49 (Lothrop, 1924, figs. 90, 104, plate 25) show benches, and shrine rooms which may have extended from the rear of the dwellings as in some of the houses at Mayapan. These two houses undoubtedly had walls of wood and roofs of thatch.

4. BURIALS AND BURIAL VAULTS

This chapter deals with the 40 burials and 18 burial vaults found in residential buildings and other structures associated with them. The burials are described first and then the burial vaults.

The term burial includes everything connected with an interment: grave, skeletal material, and associated objects. The term grave is used as a general heading for various types of resting places for the dead: simple, cist, and crypt.

Simple: A grave without any definite outline, with one or more bodies, in the fill of a building or under the floor of a court or plaza.

Cist: A grave with definite outlines that may be the sides of an excavation into structural fill, masonry walls, bedrock, or a combination of any of the three. The floor of the cist can be of plaster, leveled fill, or bedrock. Cists have no capstones and are filled with earth.

Crypt: Usually a more carefully walled grave, more elaborate, and always roofed with either capstones, a corbeled vault, or wooden beams supporting the masonry above. Crypts were not filled with earth. Earth has occasionally been found in crypts that had been opened or whose roofs were partly or completely collapsed, but it never went as high as the roof.

Burials have been given numbers 1 to 40.

The term burial vault is employed for a place apparently prepared for future interment of the dead but never so used. The two types of burial vaults are cist and crypt. The definitions of these two terms given above for graves apply to burial vaults. Burial vaults are numbered 1 to 18. In the descriptions below, C. R. stands for Current Reports.

Burials

Burial 1 (p. 187; C. R. 17, p. 29)

Location: Under floor of passageway leading from front room to back room of Str. A-3c, a dwelling-type building (fig. 2, Str. A-3c,2).

Grave: A more or less rectangular cist, long axis east-west, lined with rough masonry. The floor of the cist, 1.20 m below the building platform, is of plaster. Bedrock was 0.20 m below this.

Skeletal material: Two skeletons on floor at north side of the cist with heads to the east.

Furniture: Broken bone awl; piece of coral; sherds.

Burial 2 (p. 185; C. R. 4, pp. 48-49)

Location: Under floor of west bench in front room of Str. J-50a, a dwelling.

Grave: Rectangular cist 1 by 1.20 m with a depth of 1.80 m from top of the bench. Long axis is north-south. The uneven floor is formed by bedrock. The west and south sides of the grave are fairly well indicated by rough masonry. The east wall is poorly defined.

Skeletal material: Parts of a human jaw and a leg bone were found on the floor.

Furniture: On floor near northeast corner were 38 large flint chips and a mano. Other objects in the grave consisted of a hammerstone; 2 fragments of shell; an oval pebble; a fragment of an obsidian flake blade; 2 fragments of shell; sherds.

Burial 3 (p. 185; C. R. 4, pp. 46-47)

Location: Under south bench in front room of Str. J-131a, a dwelling (fig. 15,e,2).

Grave: Rectangular crypt, long axis east-west. The floor is of well packed lime mortar, and the walls, made of medium-sized stone blocks, rise 0.75 m vertically to a stepped corbeled vault that continues up 0.75 m more (figs. 15,e,2; 22,j). The tomb was filled with debris to the height of the end walls, which rise vertically at least 1.10 m above the floor. Most of the vault stones had fallen into the tomb. Three capstones were recovered, two of which were in place. The vault stones were not beveled. Plaster still remains on the walls to the height of the spring of the vault. Bedrock is 0.12 m below the floor.

Skeletal material: The bones were mixed and scattered throughout the debris near the floor level. There were two adults, one lying flexed on its left side facing south against the south wall, the other flexed lying on its right side facing the same wall. The remains of an infant were found under a large drum-shaped stone in the center of the tomb.

Furniture: Shell ornament; drum-shaped stone; pottery whistle; flint blade; fragment of obsidian blade; broken piece of obsidian; animal bones; sherds.

Remarks: The scattered condition of the bones and the fact that the vault was exposed and open at one end indicate that the grave had been robbed in ancient or modern times.

Burial 4 (p. 185; C. R. 4, p. 47)

Location: Under north bench in front room of Str. J-131a, a dwelling (fig. 15,e,1).

Grave: Rectangular cist, long axis east-west, measuring 1.15 by 1.60 m. The floor, 1.25 m below the floor of the room, is very uneven, and the masonry of the walls is rough and crude.

Skeletal material: Remains of two skeletons. The bones, except for the skulls, were concentrated near floor level in the northern half of the tomb. The two skulls in the northeast corner, placed with top of head downward resting on the floor, suggest secondary burial.

Furniture: Two shell ornaments; pottery figurine of a man; pottery figurine of a woman; 2 small pieces of charcoal; deer antler; a filed human tooth.

Burial 5 (p. 186; C. R. 10, p. 193, Lot A-54)

Location: Below early floor between two central benches in front room of Str. K-52a, a dwelling (figs. 5,b; 15,g,1). The early floor is associated with some earlier construction than Str. K-52a, possibly just a platform.

Grave: Simple type.

Skeletal material: Remains of a skeleton of a child resting on bedrock in flexed position, head to east. There was a deposit of pottery and ash above the bones.

Furniture: Bone spindle whorl; pottery ladle censer; pottery human effigy jar; pottery pedestal base vessel; sherds.

Burial 6 (p. 186; C. R. 10, p. 194, Lot A-62)

Location: Below early floor under center of middle back room in line with doorway into front room, Str. K-52a, a dwelling (figs. 5,b; 15,g,2).

Grave: Simple type.

Skeletal material: Two adult skeletons, one with body extended and skull to east. The position of the other could not be determined. The mandible of an old adult indicated a possible third skeleton.

Furniture: Rubbing stone; 17 obsidian blade fragments; carved tinkler shell; 3 pottery pellets; sherds.

Burial 7 (p. 186; C. R. 10, p. 193, Lot A-58)

Location: Below early floor under center of shrine room, Str. K-52a, a dwelling (figs. 5,b; 15,g,3).

Grave: Rectangular cist, long axis north-south, outlined by rough stone walls on three sides.

Skeletal material: Remains of 5 adult and 1 child skeletons resting on bedrock. Four of the adult skulls were at the south end of the cist; the other adult and the child were against the center part of the west wall. The bones were so fragmentary and mixed that the positions of the skeletons could not be determined. All appear to have had their heads to the south.

Furniture: Shell pendant; small obsidian flake; sherds.

Burial 8 (p. 186; C. R. 10, p. 193, Lot A-52)

Location: On floor at south end of shrine room in corner formed by south wall and altar, Str. K-52a, a dwelling (fig. 5,b).

Grave: Simple type. No definite grave, skeleton resting on floor of room and covered by debris. It is possible that it is the skeleton of an individual who died in the corner of the room after the abandonment but before the collapse of the building.

Skeletal material: Remains of an adult male.

Furniture: None definitely associated with the skeleton.

Burial 9 (p. 187; C. R. 10, pp. 190-91)

Location: Under floor of north room of Str. K-52c, a group shrine. The north room is earlier than the south room and once stood alone (figs. 5,b; 15,h).

Grave: Crypt, roughly rectangular, long axis northwest-southeast. The side walls slope in toward the top of the vault, which is closed by several large slabs. The end walls are relatively vertical. The height of the vault from its floor, which is bedrock, to the covering slabs is 0.75 m. The walls are formed in part by a limestone ledge and by rough, dry masonry.

Skeletal material: Badly disintegrated remains of an adult.

Furniture: Fragments of a pottery bowl; sherds.

Burial 10 (p. 191; C. R. 36, pp. 475-76)

Location: Under floor of doorway between front and back room of Str. K-67A, a dwelling. The burial lies mostly under the front room (fig. 3,1).

Grave: Rectangular cist, long axis north-south. The walls are of roughly cut stone, and the floor is the bedrock, which is very uneven.

Skeletal material: Adult male, extended on its back, arms flexed, and head to the northeast. The skull showed artificial occipital deformation, and some of the other bones showed an arthritic and degenerative condition. The only evidence of another skeleton was a fragment of mandible of an adult.

Furniture: Two pieces of coral; fragment of bivalve shell; 2 stone disks; 6 animal bones; sherds. Of 795 sherds found, 510 were of censers.

Burial 11 (p. 192; C. R. 36, p. 477)

Location: Under floor in center of room, in front of altar set into back wall of Str. P-14a (fig. 11,b,1). This building may have served as an oratory.

Grave: Rectangular crypt, long axis east-west, with rough stone walls. The floor is the bedrock, which slopes down to the west. The crypt was covered by two large, flat stones which project above the floor level of the room.

Skeletal material: Five skeletons, one old male and two females with their heads at the east end of the crypt, and an adult male and a very old female with their heads at the west end. Four of the skeletons had their legs flexed and their arms extended. The bones of the fifth skeleton, one of the females at the east end of the crypt, had been burned, and its position was not determined.

Furniture: Carved deer antler; uncarved deer antler; copper tweezers from under head of old male; 3 sting ray spines; worked bone; 4 fragments of obsidian blades; flint point with tenon; broken flint point; piece of worked shell; pottery disk; shell fragments; sherds.

Burial 12 (p. 192; C. R. 36, p. 478)

Location: Under floor directly in front of altar and extending under it in Str. P-23c, an oratory (fig. 11,c,3).

Grave: Cist, formed by a natural cavity in bedrock. It is roughly oval; long axis east-west.

Skeletal material: Four adults, probably three male and one female.

Furniture: Deer antler awl.

Burial 13 (p. 193; C. R. 36, pp. 479-80)

Location: Under floor in center of room in front of altar in Str. P-28b, an oratory (fig. 11,j,2).

Grave: Oval cist, long axis east-west. The walls are of rough, unfaced stones, and the floor, 1.10 m below the floor of the chamber, is bedrock.

Skeletal material: Adult male lying on bedrock, extended on its back with head to the east.

Furniture: Hammerstone near left hand; 2 antler earplugs; pottery vessel with pedestal base and stone lid in northeast corner; fragment of bone point; fragment of green celt; miniature pottery vessel; bird and animal bones.

Burial 14 (p. 193; C. R. 36, p. 481)

Location: Under floor in center of room in front of altar in Str. Q-37a, an oratory (fig. 11,k,1).

Grave: Rough cist, rectangular, long axis east-west.

Skeletal material: Two skeletons, one an old female and one a very old male.

Furniture: Turtle plastron and carapace, each with drilled hole; limestone metate; mano; 2 hammerstones; rubbing stone; whetstone of foreign stone; flint blade; five-sided rubbing stone; rubbing stone; fragments of 2 deer antlers; worked and drilled shell; small shell; 2 jaguar teeth; fragment of tepesquintle jaw; bone spindle whorl; 4 flint chips; piece of worked shell; fragment of sting ray spine; worked bone tube; bone awl; flint arrow point notched for hafting; sherds, many of censers.

Remarks: The bones of the two skeletons had been much disturbed. The floor over the cist had been cut through, probably after the interment, to judge by the disturbed condition of the bones. As the floor was cut through before the collapse of the building, it is likely that the grave was robbed at the time of abandonment.

Burial 15 (p. 187; C. R. 17, pp. 32, 40, Lot A-125)

Location: Under central bench in front room of Str. Q-62, a dwelling (fig. 8,z,1).

Grave: Irregularly shaped stone-lined cist, the bottom of which is 0.75 m below the level of the floor of the room.

Skeletal material: Remains of three children so fragmentary that their positions could not be determined.

Furniture: Fragment of copper; pottery whistle, iguana; pottery whistle, dove; 2 pottery whistles, jaguars; pottery whistle, human figure; small pottery effigy censer; pottery cup; spiked pottery cup; pottery effigy censer, figure mostly gone; upper half of pottery whistle, woman; pottery whistle, monkey head; pottery bird head; tinkler-type shell; 3 small seashells; 3 fragments of obsidian blades; 22 shell beads; sherds.

Remarks: Much of the furniture with the children's skeletons is in the nature of toys.

Burial 16 (p. 187; C. R. 17, pp. 30, 39, Lot A-114)

Location: About 1 m south of Str. Q-62, a dwelling, and in line with center of building.

Grave: More or less oval stone-lined cist, 0.80 by 1.90 m, long axis north-south. The walls are of rough and irregular masonry. The floor, formed of uneven bedrock, lies 0.80 to 0.90 m below the surface.

Skeletal material: Remains of three adult skeletons. Two skulls were at either side of the north end of the cist, and the third was near the center of the west side.

Furniture: Three large effigy censers; whetstone; polishing stone; 4 flint chips; flint point; shell tinkler; piece of worked shell; obsidian core; fragment of obsidian core; 14 obsidian chips; fragment of cylindrical mano; sherds.

Remarks: Of 1876 sherds found in the cist, 1059 were of censers.

Burial 17 (p. 195; C. R. 33, p. 434)

Location: Under floor in center of east or main room and extending under the dais in Str. Q-165, an oratory (fig. 23,h).

Grave: Roughly rectangular cist 0.93 m deep from floor level. It is built of crudely dressed stone, the floor and walls being completely covered with plaster. The long axis is east-west.

Skeletal material: Remains of five skeletons. Two of the skeletons lay face up, fully extended in opposite directions on an east-west axis; the other three were clustered on the front or north side of the cist.

Furniture: Pottery vessel; 2 figurines; 7 obsidian flake-blade fragments; 4 animal bones; sherds.

Remarks: The three dislocated skeletons on the north side could have been put in disarticulated, or have been disturbed by looters, or, more likely, have been pushed aside to accommodate the two burials that were well articulated. This cist probably served as a family tomb. Of the 910 sherds recovered, 54 were of effigy censers.

Burial 18 (p. 195; C. R. 33, pp. 435-36)

Location: Under floor in center of west room of Str. Q-165, an oratory.

Grave: Natural cave in bedrock; no marks of excavation tools were found on its rough, jagged walls. The natural opening leading down into the cave had been widened enough to admit a man. The entrance was closed by one large and two smaller slabs. The bottom of the cave, which measures 1.40 by 1 m, is 2.10 m below the upper floor level of the room. This grave, although not typical, falls in the crypt type.

Skeletal material: Three skeletons and a cremation. The uppermost skeleton was in poor condition and disturbed. The head was to the west, and the body flexed. The next skeleton below was undisturbed, with its head northwest and body flexed. The deepest skeleton had its head almost due north and was undoubtedly flexed, though the long bones were badly disturbed, probably by later burials. On the east side of the cave a restricted orifice bowl, broken but complete, was found containing cremation ashes, both human and animal. Very near and facing the mouth of the bowl a pot lid was found.

Furniture: Pottery bowl; pottery lid; sherds.

Remarks: The cave could have been used for burials before or after the construction of the room above it. From the quantity and type of artifacts found in the room it had served as a kitchen.

Burial 19 (p. 195; C. R. 33, p. 435)

Location: Directly above floor in south part of west room of Str. Q-165, an oratory.

Grave: Simple type.

Skeletal material: Remains of a skeleton partly disturbed with head to north. The long bones were out of position, but the arm bones suggested flexing rather than full extension.

Furniture: None.

Burial 20 (p. 195; C. R. 33, p. 435)

Location: Below floor level in west part of west room of Str. Q-165, an oratory.

Grave: Small natural pit in the bedrock. As this grave had no capstones it falls in the cist type.

Skeletal material: Two skeletons, the upper badly disturbed, the lower tightly flexed with its head to the west.

Furniture: Jade bead; drilled shell; shell bead; 2 whole shells; sherds.

Burial 21 (p. 195; C. R. 33, p. 427)

Location: In fill under edge of southwest bench in transverse room of Str. Q-168, a dwelling.

The burial clearly antedated the building of the bench.

Grave: Simple type in fill.

Skeletal material: Skeleton of a child of 11 or 12, lying flexed on its left side, with its head and trunk under the edge of the bench. The pelvis and legs had been badly disturbed, and most of the lower bones were missing.

Furniture: Nine pierced cowry shells near neck, presumably part of a necklace; 1 whole cowry shell; shell tinkler; shell pendant; bone carving of a serpent head; 2 bone awls; obsidian arrowhead; flint chip; sherds. The above were found near and probably were associated with the burial.

Burial 22 (p. 196; C. R. 25, pp. 228-29)

Location: Below floor between two central benches in main room of Str. Q-169, a dwelling (fig. 4,a,1).

Grave: Corbeled crypt, entered by three steps on the south side (fig. 23,g). The crypt is nearly square. As the two walls of the vault were far apart almost immediately below the floor of the room, and no large capstones were found, it can be assumed that a wooden ceiling closed the tomb. The masonry is inferior to that of the building. The floor is of very hard plaster.

Skeletal material: Skeleton lying extended in supine position the full length of the north wall with skull to east. The left forearm lay across the chest; the right had been disturbed, the radius being in the southwest corner of the tomb. Hand and foot bones had been disturbed, and the skull was badly smashed.

Furniture: Copper bell beneath the right tibia, just below the knee; 12 tripod bowls, small and mostly of inferior ware, and a handled brazier in southwest quarter of tomb.

Remarks: Except for the above furniture and the human bones, the tomb was empty. About this the Thompsons say, "Clearly there was room for large quantities of perishable goods, or nonperishables may have been removed from the tomb by looters. The presence of only one copper bell—and that in a position where it might have escaped observation by looters—and of such inferior pottery with the burial of a person presumably of considerable importance suggests that the tomb was robbed in ancient times. The misplaced right arm, disturbed hands and feet, and crushed skull support this suggestion, but also indicate that the robbery could not have taken place until after the flesh had decayed." (D. E. Thompson and J. E. S. Thompson, 1955, p. 229.)

Burial 23 (p. 197; C. R. 25, pp. 235-36)

Location: In altar of north room in Str. Q-172, an oratory (fig. 4,a).

Grave: The grave itself was of the simple type. A large unslipped jar of superior workmanship, containing a cremation, was placed in the fill of the altar. No cist or crypt was prepared to receive it. On top of the jar was a flat stone slab, placed there for protection. Inside the neck of the jar a tripod bowl had been wedged, and sealed in position with mortar.

Skeletal material: The crematory jar was slightly more than two-thirds full of very fine light gray ash. Mixed with this were some very small fragments of bones, including a piece of a human wrist bone, two human molars, and a human incisor.

Furniture: Also in the crematory jar were 2 teeth of an unidentifiable animal and a jaguar canine with a hole for suspension.

Burial 24 (p. 197; C. R. 25, p. 236)

Location: Under floor in front of altar in north room of Str. Q-172, an oratory (fig. 4,a,2; d).

Grave: A rectangular crypt, long axis east-west, with sides of undressed stone. The crypt, which was constructed later than the altar, had a low platform built over it. The nature of the roof is uncertain, but as there had been a cave-in destroying the platform floor above, and no stone slabs that could have spanned the crypt were found, it is probable that the roof was of wooden beams resting on the walls which end 0.35 m short of the level of the top of the platform. Undoubtedly the disintegration of a wooden roof caused the cave-in.

Skeletal material: Remains of four adults, partly articulated. As the crypt was too small to hold four bodies (its dimensions are only 1.22 m long, 0.63 m wide, and 0.48 m deep from its floor to the top of the walls), it is likely that the bodies were placed in the crypt one at a time and at intervals of several years, so that previous corpses, having disintegrated, occupied little space.

Furniture: Fragments of effigy censers; a pair of copper tweezers; shell bead; fragment of worked bone; piece of worked shell; sherds.

Remarks: It seems reasonable to believe that this crypt was used as a family burial vault by the occupants of the elaborate adjacent residence, Str. Q-169.

Burial 25 (p. 189; C. R. 19, pp. 77-79)

Location: Beneath floor of central passageway between rectangular benches of Str. Q-208-sub, a dwelling, later covered by Str. Q-208, also a dwelling (fig. 8,ff).

Grave: Simple type.

Skeletal material: Bones of four children. Two of the skeletons, which were in better condition, had artifacts with them: one, a child about 10, lay on its left side, legs and arms flexed, and skull to south; the other, an infant of less than 6 months, lay slightly lower and about 0.20 m west of the older child in an extended position.

Furniture: Some 1800 censer fragments were piled indiscriminately above the skeletal remains. Immediately behind the skull of the 10-year-old child was a pottery figurine. Around each ankle of the infant there had been a cotton band to which had been attached by thread 5 copper bells. The bells of the left anklet were separated by minute shell beads. Fragments of textile and cord were preserved. Other objects with these skeletons were: 3 moldmade figurines; antler tip; pottery whistle shaped like a spider monkey; pottery vase on low pedestal base with face of the long-nosed god on front; tripod vessel with face of the long-nosed god on front; sherds.

Remarks: From the censer fragments recovered four of the six identifiable parts of faces, six of nine feet, and seven of ten arms belonged to figures of the god Xipe Totec. J. E. S. Thompson points out that there is no longer any doubt that Xipe Totec was worshipped in Yucatan, but that it is difficult to explain the presence of these censers representing Xipe Totec with buried children. The children may have been sacrificed, but, so far as is known, the rites of Xipe Totec involved only the sacrifice of adults. As he was also a god of certain diseases, particularly those of the skin, J. E. S. Thompson (1954b, pp. 78-79) suggests that possibly the children had died of some such disease.

Burial 26 (p. 192; C. R. 36, p. 483)

Location: Below floor level in center of front room of Str. Q-244b, a dwelling (fig. 8,hh,2).

Grave: Simple type.

Skeletal material: Remains of seven skeletons, two adult males, two adult females, two other adults, and one infant. The bones were so disturbed that the positions of the skeletons could not be determined.

Furniture: Four pottery figurines; 3 flint points; tubular jade bead; jade bead; hammerstone; conch shell fragment; fragments of 5 obsidian flake blades; sherds, 34 of censers out of 231.

Remarks: The floor of the room over the grave had been broken through before the beam-and-mortar roof collapsed. This, plus the disturbed condition of the skeletal material, indicates that the grave was probably robbed.

Burial 27 (p. 192; C. R. 36, p. 484)

Location: Below floor level in center of Str. Q-244c, a platform.

Grave: Simple type.

Skeletal material: Remains of skeleton of a child about 2 years old.

Furniture: The following objects and midden material came from the pit, dug by us, in which the child skeleton was found (just what part of this material was associated with the burial is not known): large tubular jade bead; bone awl; perforated jaguar tooth; perforated shell tinkler; pieces of carved bone; sherd, possible spindle whorl; 4 conch shell fragments badly burned; 2 pieces of coral; 8 flint chips; round flint scraper; used flint chip; flint thumbnail scraper; 8 fragments of obsidian flake blades; miscellaneous animal bones; sherds.

Burial 28 (p. 192; C. R. 36, p. 484)

Location: Below level of court floor of group Q-244 about halfway between Str. Q-244d and the platform supporting Str. Q-244b.

Grave: Simple type.

Skeletal material: Remains of skeletons of an adult female (?) and a child about 4 years old.

Furniture: Fragments of two bone awls; fragment of obsidian flake blade.

Burial 29 (p. 199; C. R. 29, pp. 306, 326)

Location: Under floor of front room of Str. R-86, a dwelling (fig. 6,a,14).

Grave: Roughly circular cist lined with a thick coat of rough plaster and filled with debris.

Skeletal material: Fragments of a skull.

Furniture: All that remained of the original contents of the cist, besides the skull fragments, was an effigy vessel.

Remarks: The cist may have been made in Phase I of the structure, before the original buildings had been razed, or before the end of Phase II. It was later reopened and plundered. It is not certain, however, whether this was done at the time of abandonment or at the time when Str. R-86 was built. The later floors of Str. R-86 were broken over the tomb.

Burial 30 (p. 199; C. R. 29, pp. 307, 327)

Location: Under floor of front room of Str. R-86, a dwelling, directly in front of doorway leading into central back room (fig. 6,a,13).

Grave: Oval cist, 2 m long, 0.80 m wide, and about 0.80 m deep, long axis east-west, lined with a thick coat of rough plaster. The cist was filled with pottery and stone objects, stone, earth, and debris of broken floors.

Skeletal material: Disarticulated bones of a skeleton scattered on floor of cist.

Furniture: Most of the smaller artifacts and five of the small tripod bowls mentioned below were found on the floor of the cist and may have been placed there with the original burial. The rest was probably put in when the tomb was opened (see under Remarks). Objects found: stone idol; stone temple; stone tripod; stone axe; 3 worked fragments of stone; 5 flint blades or points; an arrow point; an obsidian flake blade; 5 fragments of obsidian flake blades; 3 jade beads, a rectangular piece of iron pyrites, perforated; 2 copper bells; 2 shell beads, 2 shell disks; perforated human tooth; a sting ray spine; a shark tooth; 18,433 sherds, of which 16,795 were from figure censers. Sixteen pottery vessels were found in the cist: 9 tripod bowls; 3 tripod cups; 2 gray jars; 2 nearly complete large tripod bowls. Most of the pottery and probably all the small sculptures, which were near the surface, were put in after the cist was reopened.

Remarks: Before Str. R-86 was abandoned and burned, Burial 30, which was put in after Phase II, was apparently reopened, excavated, and refilled. Proskouriakoff and Temple (1955, p. 307) suggest that the remains in the cist may represent most of the ceremonial equipment of the whole group, with the exception of the previous material that was carried away, and that, since very few fragments of effigy censers were found in the various shrines of the group, they had been deliberately removed from their customary locations, and been broken and hidden here by the departing inhabitants, who, after filling the cist to overflowing, burned the building, causing it to collapse.

Burial 31 (p. 201; C. R. 29, pp. 314-15)

Location: In crevice of bedrock under a clayey layer of earth in trench at entrance to vaulted passage to group formed by Strs. 85 to 90 (fig. 6,a,11).

Grave: Simple type.

Skeletal material: Remains of a child 6 to 8 years old. The skeleton was in poor condition, but from all appearances had been placed on its side in a flexed position.

Furniture: None.

Burial 32 (p. 186; C. R. 10, p. 185)

Location: Under floor between two central benches in front room of Str. R-100, a dwelling (fig. 8,ee,2).

Grave: Simple type.

Skeletal material: Remains of five adult skulls at level of bedrock 0.85 m below floor of room above. All skeletal material was in a poor state of preservation, and nowhere did an entire skeleton appear to be present. Long bones were not articulated and were found above and at the sides of three of the skulls, undoubtedly representing secondary burial.

Furniture: Pottery figurine of a woman; obsidian lancet fragment; flint chips; pieces of charcoal; sherds.

Burial 33 (p. 194; C. R. 36, p. 487)

Location: Under floor in center of room of Str. R-142c, an oratory (fig. 11,d,2).

Grave: Rough cist 1.90 m long, 1 m wide, 0.80 m deep, long axis east-west.

Skeletal material: The cist contained three skeletons. The central one, that of an adult male, lay extended at full length between two adult females, all with their heads to the east. The skeleton on the north side was extended at full length; the one on the south was lying on its right side facing north and had its arms and legs flexed.

Furniture: Copper ring with human head; 3 plain copper rings; fragment of textile; jade bead; 2 fragments of obsidian flake blades; sherds.

Burial 34 (p. 194; C. R. 36, p. 489)

Location: Below level of top court floor directly in front of Str. S-133a. Although not actually in this dwelling-type building, the burial was certainly associated with it.

Grave: Cist that had been cut through two early court floors. It was impossible to tell whether the latest or top floor had been cut, as it was in very poor condition. The cist was rectangular, 0.90 by 1.10 m, long axis north-south. Its south and west sides were of rough masonry, but the other two were just cut from the fill. The floor, 0.15 m above bedrock and 1.40 m below the level of the top floor, was plastered.

Skeletal material: Adult female lying on its right side in a flexed position, head north. Two lumbar vertebrae were fused, and the skull was artificially deformed, having sagittal flattening.

Furniture: Sting ray spine; sherds.

Burial 35 (p. 194; C. R. 36, pp. 490-91)

Location: Under central bench in east room of Str. S-133b, a building probably used as a dwelling (figs. 14,hh,4; 23,c).

Grave: A narrow opening in the east wall of the central room leads down to a rectangular stone-lined crypt which measured 1 by 1.45 by 0.60 m from floor to top and extended under the east face of the bench above it. The stones forming the face fell into the crypt, probably when the wooden beams, which must have rested on the walls of the crypt to support the masonry and fill above, collapsed. The walls of the crypt were made of roughly cut stones, and the floor was plastered.

Skeletal material: Remains of five skeletons, three adults and two children. Very few long bones were found, and so the position of the skeletons could not be determined. One of the skulls, that of an old male, was burned black.

Furniture: Complete pottery doll with movable arms and legs; small stone pestle; copper ring; jade bead; sherds.

Remarks: This tomb did not have sufficient room to hold five individuals at one time, even though two were children and one had apparently been cremated. It is likely they were put in at intervals, the bodies of earlier interments having had time to decompose.

Burial 36 (p. 195; C. R. 36, p. 492)

Location: Put through early floor and covered by late floor between benches in front room of Str. Y-2d, a dwelling (fig. 8,v,1).

Grave: Cist cut out of fill with bedrock as its floor. It is 0.90 by 0.90 m, and 1 m from bedrock to top floor.

Skeletal material: At the bottom of the cist there was the skeleton of a young adult female lying on its right side, legs flexed, arms crossed at the abdomen, and head to the east. The only other bone found was a fragment of a baby skull, which could indicate a mother-and-child burial.

Furniture: Bone spindle whorl; 2 copper rings; flint arrow point; fragment of conch shell; fragment of obsidian blade; sherds, 37 of censers out of 78.

Burial 37 (p. 195; C. R. 36, p. 494)

Location: Below floor level in eastern half of front or principal chamber of Str. Y-8b, probably an oratory (fig. 11,h,1).

Grave: Simple type. Material recovered had apparently been dumped rather indiscriminately into the fill.

Skeletal material: Parts of eight adult skeletons. Occasionally long bones and vertebrae may still have been associated with skulls, but in general the skeletal material was found scattered throughout the fill. This may well have been the family ossuary for the residents of the group.

Furniture: Perforated shell; 11 obsidian chips; 29 flint chips; 2 small notched flint arrow points; large flint blade; 2 worked sting ray spines; curved bone with spines; perforated sting ray spine; cylinder-shaped piece of gum of tree or plant, probably copal mixed with chicle or rubber; jade bead; shell fragments; tripod grater bowl; pottery vessel with pedestal base; pottery ladle; 3 obsidian flake-blade fragments; sherds.

Burial 38 (p. 188; C. R. 17, p. 35)

Location: Below floor level between two benches in front room of Str. AA-37, a dwelling.

Grave: Masonry-lined cist, rectangular, long axis east-west (fig. 16,d). The walls are bedrock in places, but for the most part they are made of large slabs set on end with some blocks laid in courses. The floor is bedrock, 1.40 m below the floor of the building.

Skeletal material: On the floor of the tomb were two skeletons. One, an adult, with head to east, was lying on its back. A headless pottery figurine may have been held in the right hand. In the southwest corner of the tomb was the skeleton of an adolescent lying on its right side with knees flexed. With this skeleton was a clay figurine which had had articulated arms and legs.

Furniture: Pottery figurine made for articulated arms and legs; fragment of pottery female figurine; sherds.

Burial 39 (p. 188; C. R. 17, p. 37)

Location: Below floor of southern extension of platform supporting Str. AA-103a, a dwelling.

Grave: Crypt, roughly circular, cut mostly out of bedrock (fig. 16,f). As the bedrock sloped down to the south, this side and the upper part of the west side were built of roughly worked stones. The entrance to the crypt was a narrow passageway on the east. Rough steps cut out of the bedrock on this side facilitated access to the chamber, where a rough floor had been built to level off the uneven surface of the bedrock. The passageway had been covered by four large capstones. How the remainder of the crypt was roofed is not known, as no large stones that could have spanned the opening were found. Possibly wooden beams were used.

Skeletal material: Two young adult skeletons lying on the floor, their long axis north-south. The skeleton on the western side of the crypt, that of a male, had its legs partly flexed and its arms extended, hands below the pelvis. It lay on its right side and faced west. The skeleton on the east side of the crypt, that of a female, had its legs partly flexed and its arm flexed. It lay on its left side and faced east. It had three copper rings on one of the finger bones.

Furniture: Three copper rings; shell bead, 2 pottery figurine heads; fragment of pottery figurine; copper tweezers; fragment of obsidian blade; pottery tripod bowl; metate, tufa; 2 animal bones; sherds.

Burial 40 (p. 188; C. R. 17, p. 38)

Location: Below floor and near east edge of upper level of platform supporting remains of Str. AA-112a. Just what function this construction had is not known.

Grave: Masonry-lined cist, rectangular, 0.50 m deep, long axis north-south (fig. 15,b). The masonry of the walls is of slabs set on end; the floor is of plaster directly on bedrock. No means of covering the tomb was indicated; it may be that it was filled with earth as found.

Skeletal material: The remains of a skeleton in a poor state of preservation were lying on the floor of the cist. Fragments of the skull were at the north end; the body was lying on its right side with legs semiflexed and arms flexed.

Furniture: Two flint fragments.

Burial Vaults

Burial Vault 1 (p. 187; C. R. 17, p. 29)

Location: Under remains of bench in southwest corner of front room of Str. A-3c, a dwelling (fig. 2,A-3c,3).

Description: Masonry-lined crypt, irregular in shape, long axis east-west, in poor state of repair (fig. 15,a). It had two plastered floors. The original floor slopes downward from east to west and is 0.12 to 0.27 m below the secondary floor. Bedrock lies from 0.05 to 0.20 m beneath the primary floor. In the south wall of the crypt and at the west end is a niche 0.35 m deep and 0.60 m wide, lined with masonry and roofed with a stone slab. Both floors extend into the niche.

Objects found: Sherds.

Burial Vault 2 (p. 186; C. R. 4, p. 50)

Location: Under middle bench in front room of Str. I-94, a dwelling.

Description: Rectangular crypt 0.70 by 0.90 m, long axis north-south (fig. 22,k). The walls, 0.50 m high, are formed of one and two courses of stones. The floor is a 0.04-m-thick layer of plaster; there was no plaster on the walls. The crypt was closed by two large stone slabs resting on the vertical walls. The under side of the capstones is 0.20 m below the top of the bench. Entrance to the crypt is through an opening on the south side, where there are two large jambstones.

Objects found: Worked bone; worked shell; piece of obsidian; sherds.

Burial Vault 3 (p. 186; C. R. 4, p. 50)

Location: Below floor level of front room in Str. I-94, a dwelling, in front of passageway formed by central and west benches.

Description: Irregularly shaped, stone-lined cist approximately 0.70 m square and having a depth of 0.25 m. Its floor is the plastered surface of an earlier terrace level.

Objects found: A few sherds.

Burial Vault 4 (p. 185; C. R. 4, p. 47)

Location: Below floor level in southern half of Str. J-49a, a long low platform (figs. 15,c; 23,a).

Description: Rectangular cist, 1.25 by 1.95 m, long axis east-west. The floor of rough lime plaster 0.02 m thick lies on bedrock 1.05 m below the top of the platform. The walls are of block-type masonry. No capstones were found. The cist was found with its walls exposed and filled to within 0.45 m of the top of the bench with loose earth and stone.

Objects found: Broken flint point; polished gray stone; 6 fragments of obsidian chip blades; sherds.

Burial Vault 5 (p. 185; C. R. 4, pp. 48-49)

Location: Under east bench in front room of Str. J-49b, a dwelling (figs. 15,d; 23,b).

Description: Rectangular cist, 1.10 by 1.95 m and 0.82 deep, long axis east-west. The walls are of rough masonry but covered with a heavy layer of lime plaster. The floor was smoothly plastered. In the south wall 0.55 m above the floor and 0.38 m from the southwest corner is a stone plug projecting 0.06 m. In the east wall of the cist there is a recess roughly 0.56 m wide by 0.75 m deep. The opening has a width of 0.40 m. Resting on the floor of the recess, which is 0.25 m above the floor of the crypt, and projecting 0.25 m from the north wall is a plaster-covered stone step 0.13 m high.

Objects found: Mano; rubbing stone; fragment of stone cylinder; fragment of shell; 2 flint chips; bone; sherds.

Burial Vault 6 (p. 186; C. R. 4, p. 49)

Location: Below level of floor under west end of Str. J-122c, a platform (figs. 15,f; 23,f).

Description: Semicircular cist with an average diameter of 1.70 m. Crude masonry walls rise to within 0.12 m of the floor of the platform. An opening on the south, 0.45 m wide, is defined by two larger jambstones 0.75 m high by 0.45 m wide. The door sill and floor of the tomb are of bedrock, very uneven and rough.

Objects found: Hammerstone; pottery whistle; 11 fragments of obsidian flake blades; flint blade; carved shell ornament; perforated shell tinkler; 3 odd pieces of shell; perforated animal tooth; 7 flint chips; animal bones; sherds.

Burial Vault 7 (p. 191; C. R. 36, fig. 2,a,2)

Location: Under central bench in front room of Str. K-67a, a dwelling (fig. 3,K-67a,3).

Description: Roughly rectangular cist 1.10 by 1.60 m, and 0.65 m from top of bench to floor of bedrock. Long axis east-west.

Objects found: None.

Burial Vault 8 (p. 193; C. R. 36, p. 479)

Location: Under altar in Str. P-28b, an oratory (fig. 11,j,1).

Description: Masonry-lined circular shaft averaging 0.75 m in diameter and extending to bedrock 0.95 m below the floor of the room. As the shaft had no roof, it falls into the cist type of burial vault.

Objects found: Spiral shell; fragment of obsidian blade; sherds.

Remarks: This type of burial vault is the only one found in a structure associated with a residential group. It is similar to the shaft found in Str. T-72, a temple. There the shaft had been used as a depository for the charred bones of cremated adults, children, and animals (Shook, 1953, p. 209). It is likely that the shaft in Str. P-28b was made to serve as a family ossuary for the residents of the group.

Burial Vault 9 (p. 186; C. R. 10, pp. 182-83)

Location: Under center of front room and extending to middle of back room of Str. A-119a, a dwelling (figs. 8,dd,1; 16,a; 17,f).

Description: This is an elaborate crypt type of burial vault consisting of two chambers (fig. 23,i-l). One chamber contains a stairway and forms a sort of antechamber; the other is the inner chamber with a bench extending across the back wall. Entrance to the stairway was an opening in the floor of the front room, more or less in line with the medial axis of the building and to the east of the faces of the benches. As the opening was in a poor state of preservation, it is not known whether the entrance was closed or left open when the structure was occupied. The masonry of the antechamber is crude; chinking was noted, and in some places plaster remains on walls, steps, and vault. The vault rises from an irregular offset. The floor in both chambers was virtually destroyed; traces are seen where it curves up to the walls, step, or bench. The doorway between the two chambers has corbels supporting the two stones of the lintel. The jambs are of slabs and blocks, and had been plastered. The doorway is now blocked to a height of 0.38 m, although at one time it may have been blocked to the lintel. The floor in the doorway is carefully plastered. The masonry of the inner chamber, as in the antechamber, is of irregularly shaped, unfaced stones. There is an average 0.10-m offset at the spring of the vault and at the ends of the room. The vault is made of slabs and blocks, none beveled. Suggestions of stepping of the vault faces are probably only irregularities in construction; traces of a heavy coat of plaster still adhere in places. Much chinking was noted throughout the masonry.

Objects found: Sherds.

Remarks: The two chambers of the crypt had at some time in the past been opened and cleared, and the bench in the inner room had been excavated. Just when this was done could not be determined. All that was found in the crypt was a few sherds. The fact that not a single human bone was found in either chamber would indicate that it had never been used for burial purposes.

Burial Vault 10 (p. 194; C. R. 36, p. 489)

Location: Under central bench in front room of Str. S-133a, a dwelling (fig. 8,u,1).

Description: Rectangular stone-lined cist, 1 by 1.70 m, long axis east-west.

Objects found: Sherds.

Burial Vault 11 (p. 194; C. R. 36, pp. 490-91)

Location: Under southern bench in east room of Str. S-133b, a building that was probably used as a dwelling (figs. 14,hh,5; 23,d,e).

Description: Narrow opening in the east wall of the central room leads down to a rectangular crypt. The description of the crypt under the central bench of the east room of Str. S-133b, Burial 35, will describe Burial Vault 11. The two crypts are almost identical, the only difference being that one had been used for burial purposes but the other had not.

Objects found: Flint blade; sherds.

Burial Vault 12 (p. 195; C. R. 36, p. 492)

Location: Under south bench in front room of Str. Y-2d, a dwelling (fig. 8,v,3).

Description: Rectangular stone-lined cist, 0.80 by 1.80 m, with plastered floor, long axis north-south. The floor is 0.50 m below the top of the bench.

Objects found: Sherds.

Burial Vault 13 (p. 195; C. R. 36, p. 492)

Location: Under north bench in front room of Str. Y-2d, a dwelling (fig. 8,v,4)

Description: Rectangular stone-lined cist, 0.80 by 1.20 m, with plastered floor, long axis north-south. The floor is 0.50 m below the top of the bench.

Objects found: Flint point; 2 perforated shell disks; hammerstone; sherds.

Burial Vault 14 (p. 195; C. R. 36, p. 493)

Location: Under bench in south end of back room of Str. Y-2d, a dwelling (fig. 8,v,2).

Description: Rectangular stone-lined cist, 0.90 by 1.10 m, long axis east-west. The plastered floor of the cist is 0.20 m above bedrock and 0.90 m below the top of the bench.

Objects found: Fragment of limestone vessel; 2 rubbing stones; 2 stone disks; unfinished flint blade; perforated shell; sherds.

Burial Vault 15 (p. 188; C. R. 17, pp. 32-33)

Location: Under west bench in front room of Str. Z-4b, a dwelling (figs. 5,d; 16,b).

Description: Rectangular crypt, long axis north-south. Built at the time of the construction of Str. Z-4b, the crypt was entered by a passageway in the south end of its west wall. The passageway, below the level of the terrace floor, started on the west side of the building and continued eastward, passing under the west wall of the structure to open into the sub-bench chamber. Where the passageway extends under the west wall, the masonry of the wall projects 0.10 m to form a panel. The subchamber has a rough floor of packed earth to level the uneven surface of the bedrock. The north part of the chamber is roofed with two flat, horizontal capstones; the south part is covered by large, flat stones, three on the east side and two on the west, set on edge and leaning inward to touch at the apex so as to span the gap. These last rise from a course of projecting stones that also support the capstones at the north end. On the east side the offset forming the spring line of the vault is 0.80 m above the floor; the vault soffit is formed by three steps. On the west side the spring line is 1.10 m above the floor, and there is only a single course of projecting stones. The wall at the north end of the room is vertical; that at the south end, also vertical, projects 0.05 m at a height of 1.10 m above the floor. The chamber had been filled with earth and stones to 1.10 m above the floor.

Objects found: Hammerstone; fragment of copper bell; fragment of metate, tufa; fragment of obsidian core; 3 fragments of obsidian blades; 9 flint chips; 2 pieces of shell; torso of pottery figurines made for articulated arms and legs; 2 fragments of pottery legs and 1 fragment of pottery arm made for articulation; fragment of pottery figurine; fragment of grooved metate; light green stone axe; rectangular stone, hole in center; stone plug; pounding stone; oval polishing stone; piece of stalagmite; 4 animal bones; sherds.

Burial Vault 16 (p. 188; C. R. 17, p. 34)

Location: Under central bench in front room of Str. AA-13c, a dwelling (fig. 16,c).

Description: Roughly rectangular, masonry-lined cist, long axis north-south. It has a well defined plastered floor 0.02 m above bedrock. The masonry of the walls is mixed, some large stones set on end combined with rectangular blocks.

Objects found: Obsidian flake blade; animal bones; sherds.

Burial Vault 17 (p. 188; C. R. 17, p. 36)

Location: Under west bench in front room of Str. AA-60a, a dwelling (fig. 16,e).

Description: Roughly rectangular crypt, long axis east-west. The entrance to the crypt was by a covered passageway with its opening in the south wall of the back room. The floor of the passageway at its entrance and that of the back room are on the same level. The walls are of large faced stones. From its entrance the passageway extends 1.60 m to the south, where it continues eastward a short distance, dropping 1.40 m in three rough steps cut out of bedrock to open into the crypt proper. The south and west sides of the crypt, which rise 0.60 m to the spring line, are of bedrock. The north and east sides are of large slabs. The vault, which is corbeled, is built of six courses of irregularly cut stones and is closed by large capping blocks. The floor of the crypt is of roughly worked plaster.

Objects found: Sherds.

Burial Vault 18 (p. 188; C. R. 17, p. 36)

Location: Under south bench in front room of Str. AA-94, a dwelling (fig. 16,g).

Description: Rectangular cist, long axis east-west. This cist has a depth from the top of the bench varying from 0.70 to 1.15 m. The walls in some places are cut from bedrock and supplemented with roughly worked stones. The base of the cist is of bedrock which is very irregular, at one place having a pocket 0.70 m deep.

Objects found: Metate; 4 manos; 3 rubbing stones; 4 stone pounders; worked bone; flint chip; animal bones; sherds.

Discussion

Of the 40 burials described above, 23 were associated with dwellings, 2 of these being under the court floor directly in front of a dwelling, 12 with oratories, 1 with a group shrine (Burial 9), 2 with platforms (Burial 27 and 40), 1 under a group court floor (Burial 28), and 1 outside a large dwelling group (Burial 31). The most common type of grave is the cist, of which there are 19; then comes the simple type with 13, and the crypt with 8. Although more graves have their long axis east-west than north-south, the orientation is probably not due to any custom but rather depends on how the grave best fit in the bench or location chosen for it.

In dwellings, burials are found most frequently under the floor of the front room, usually in the center of the room or in front of the center doorway leading into the back room. Of the 15 burials located under floors in dwellings, only 3 were not under the front room. One of these was under the transverse end room of Str. Q-168; another was under the shrine room in Str. K-52a; and the third was under the floor in the central back room of Str. K-52a in front of the doorway to the shrine room. Five burials were found under the benches of dwellings, all of them in the front room.

From the evidence it is obvious that it was not the custom to bury people under the back rooms of dwellings. This is interesting, because Landa says that they had their beds in the back of the house and that the front half was where they received and lodged their guests (p. 180, quote 5). It may well be that they avoided burying their dead under the floors of the rooms they slept in, not caring to sleep directly over them. On the other hand, Landa also says that in the summer they (especially the men) usually sleep in the whitened part of the house (p. 180, quote 5); this would be the front room. There is a good possibility that the central back room in Str. K-52a was not used for normal sleeping purposes, as it is so closely associated with the shrine room and there are two other sleeping chambers in the house.

A few burials are found outside dwellings but associated with them, either under the court floor directly in front of the platform supporting the house (Burials 16 and 34) or put through the floor of the platform (Burial 39). Landa mentions that they buried their dead inside or in the rear of the house (p. 181, quote 10). There is no question about their burying their dead inside the dwellings at Mayapan, but in general it would have been impossible to bury them in the rear, because most of the houses have their back room or rooms on the edge of the large terrace supporting the group. Any grave dug off the terrace would have had to be cut out of bedrock, there being insufficient depth of soil to cover a burial. This does not seem likely when there was plenty of room to place graves in the terraces or structures.

Burial 28 lies under the floor of a court and is not associated with any particular building. This burial, plus the two mentioned above found under court floors, would indicate that the practice was not uncommon. Only a small percentage of our pits were in the courts. One burial, 31, was found outside a group. It was a simple grave in a rock crevice at the entrance to the passage into the group formed by Strs. R-85 to R-90. One burial, 8, was found above floor in the corner of the shrine room in Str. K-52a. This was probably the skeleton of some individual who died in the building after it was abandoned but before its beam-and-mortar roof collapsed.

As would be expected, most of the more elaborate graves were in the finer houses. A good example is Burial 22 in Str. Q-169. The grave is of the crypt type, one of the best at the site, larger than most, with steps leading to it, and the dwelling is one of the more elaborate buildings.

Of the 23 burials located in, or directly associated with, dwellings, 9 had only one skeleton and 14 had two or more. The largest number of individuals found in a single grave was 7. The sexes are mixed in graves. An adult male and female, possibly man and wife, were found in one (Burial 39). In the grave containing 7 skeletons (Burial 26), 6 were of adults, 2 male, 2 female, 2 unknown, and 1 was of an infant. Another grave held 5 adults, 2 male and 3 female.

In many burials the skeletal remains had been disturbed or were in such poor condition that it was impossible to determine their original positions. Those found undisturbed were either extended on their backs or partly or totally flexed, lying on the right or left side. In multiple burials sometimes both positions were found in the same grave (e.g., Burial 38). It would appear that, if there was room, bodies were usually buried extended; if not, they were flexed to fit in the grave. There does not seem to have been any fixed rule as to which way the bodies headed or faced, although more headed east than any other direction. There are two instances where there is no doubt from the position of the bones that the burials are secondary (Burials 4 and 32). In multiple burials the probability is that the graves were opened when a death in the family occurred and the remains of the individuals already in the grave were often disturbed to make room for the new tenant. The only evidence of cremation in the graves associated with dwellings was in two burials: Burial 11, in which the bones of one of the five skeletons, that of an adult female, had been burned, and Burial 35, in which the skull of an old male had been burned black.

Cranial deformation was noted in two skeletons: in Burial 10 the skull of the skeleton, that of an adult male, showed artificial occipital deformation (some of the other bones showed an arthritic and degenerative condition), and in Burial 34 the skull of the skeleton of an adult female was artificially deformed, having sagittal flattening (two of the lumbar vertebrae were fused). Landa, speaking of the Indians of Yucatan, says, "They had their heads and foreheads flattened and this was also intentionally done by their mothers in their childhood" (Tozzer, 1941, p. 88). In another place, writing about the women and their treatment of their children, "four or five days after the infant was born, they placed it stretched out upon a little bed, made of sticks of osier and reeds; and then with its face upwards, they put its head between two small boards one on the back of the head and the other on the forehead, between which they compressed it tightly, and here they kept it suffering until at the end of several days, the head remained flat and molded, as was the custom of all of them" (Tozzer, 1941, p. 125). Herrera also mentions artificial head deformation (Tozzer, 1941, p. 217).

A filed human tooth was found in Burial 4 (Ruppert and A. L. Smith, 1952, fig. 8,b). Landa relates about the Indian women of Yucatan, "They had the custom of filing their teeth leaving them like the teeth of a saw, and this they considered elegant. Old women performed this task, filing them with certain stones and water (Tozzer, 1941, pp. 125-26). Landa does not mention men filing their teeth, but at Uaxactun men as well as women had this custom (A. L. Smith, 1950, p. 89, fig. 116). We do not know whether the filed tooth from Burial 4 was from a man or woman.

Although human sacrifice was undoubtedly practiced at Mayapan, as witnessed by the presence of sacrificial stones and shafts and cists filled with human bones in ceremonial structures (e.g., Strs. Q-95 and H-18; Shook, 1954, p. 271; Chowning, 1956, pp. 446-47), there is no definite evidence that sacrificial victims were buried in dwellings. True, J. E. S. Thompson found four children in a grave with censers representing Xipe Totec (Burial 25, p. 240), and it is possible that they were sacrificed to this god. Thompson points out, however, that only adults were sacrificed in the rites of Xipe Totec, but that he was also a god of certain diseases and that the children may have died of one of them.

There is no evidence that slaves or wives were buried with a man of importance. Some of the multiple burials might represent the practice, but it is much more likely that the occupants of a grave were all members of one family and were placed there at various times. The fact that some graves had entrances that could be opened for future interments, the disturbed condition of the bones, presumably caused when a new body was placed in the grave, and also the fact that some graves would not have been big enough to hold all the bodies at one time (Burial 35, p. 244) all tend to prove that it was not the custom to bury important men's wives or slaves with them when they died. Another piece of evidence against the custom is that many of the graves, some of them the most elaborate type of tomb, contained only one individual. Burial 22 (p. 239), one of the finest vaults in one of the best dwellings, for example, contained only one skeleton, that of an adult.

Furniture found in graves associated with dwellings was sparse and of no great value. This is true of burials in group oratories as well as of those in religious structures in ceremonial groups. If anything, the evidence points to better furniture in graves in dwellings than elsewhere. The failure to find things of value with burials is doubtless largely due to the graves' having been opened and robbed. Of course, some of the grave-robbing was done by treasure hunters in post-Conquest times, but there is ample evidence of graves opened during pre-Conquest times, e.g., Burial 3 (p. 233); Burial 22 (p. 239); Burials 29 and 30 (p. 242). For each burial, the objects found in graves are listed under "Furniture." A glance at these lists will show that only a few objects of value, an occasional jade bead or a few copper objects such as bells, rings, or tweezers, were present even in the undisturbed graves.

Bishop Landa, discussing burial customs of the Yucatan Indians, says that they cast objects into the graves that had to do with, or had been used by, an individual during his life, such as his idols, books, or instruments of his profession (quote 10, p. 181). Whether such objects as hammerstones, rubbing stones, obsidian blades, flint knives, turtle carapace and plastron, a possible metate, etc., indicate the activities or professions of those with whom they are interred is problematical. There is little doubt, however, that the figurines and effigy censers found in graves represent the idols of the deceased. The occupant of a grave filled with quantities of broken effigy censers, like Burial 10 (p. 235), may have been a priest. An interesting association is the furniture in Burial 15. Here three children were buried with pottery whistles in the shapes of animals and birds, small vessels, and a miniature effigy censer. The whistles may well have been their toys. The pottery doll in Burial 35 (p. 244) was between the two children in the grave and probably had belonged to one of them.

Of the 12 burials found in oratories 10 were under the floor of the room, usually centered on the altar, 1 was inside an altar, and 1 was above floor level. The last, Burial 19, probably occurred after the abandonment of Mayapan. Two graves, Burials 18 and 20, in Str. Q-165 were not in the principal room of the oratory but in a side room believed to have served as a kitchen. The former burial was in a natural cave, the latter in a natural pit in the bedrock. Both were covered by the floor of the room. The types of graves were 3 simple, 6 cist, and 3 crypt. One of the simple graves was Burial 19, which being above floor really does not enter the picture. In the 7 graves where the long axis could be determined it was east-west.

There were no elaborate graves in the oratories like those in some of the dwellings; in fact, the cists and crypts were quite small. Nine out of the 12 burials were multiple, having from 2 to 8 individuals. Of the 2 single burials, one was the skeleton found above ground, the other was below the floor in Str. P-28b. Skeletal remains were found extended, flexed, and headed every direction but south. In many graves the bones were disarticulated and had been disturbed, probably to make room for later interments. The remaining burial was a cremation in a jar in the altar of Str. Q-172 (Burial 23). Another cremation was found in a jar in Burial 18, in a grave with three skeletons. Landa mentions cremation (see below and quote 10, p. 181). The skeletons in oratories were of both sexes, and all were adults. Evidently children were buried in the residence of their parents rather than in the family oratory.

There is no definite evidence of sacrifice in burials in oratories, and the Thompsons point out that adults were probably not sacrificed at family altars (D. E. Thompson and J. E. S. Thompson, 1955, p. 238). It is reasonable to assume that these were family burial places. A few graves had obviously been opened several times to put in additional bodies, e.g., Burials 17 and 24.

Furniture found in these family ossuaries was if anything less impressive than that found with burials in dwellings, but several of these graves too appear to have been looted in pre-Conquest times.

According to Landa, the nobles and people of high esteem had their bodies burned and their ashes placed in urns over which temples were built (quote 10, p. 181). It is probably true that people of importance were buried in religious structures in the main ceremonial group at Mayapan. The burials in the two platforms, Strs. Q-59a and b, in front of Temple Q-58, contained unburned and semicremated skeletal remains of individuals that probably qualified as important personages, as did the individual buried in a rectangular cist in Str. Q-60, another platform in front of Str. Q-58 (Shook, 1954, pp. 259-60, 262). The burials in shrines Q-69 and Q-71 in the ceremonial group, excavated by Adams, may also have been of individuals that were not sacrificed (Adams, 1953, pp. 151 and 153). Whether this is so or not, there is no question that nobles and other important people were buried in their dwellings and family ossuaries. In fact, it would appear, contrary to Landa's statement, that at Mayapan, during this late period in Maya history, the emphasis was on the family group in this respect.

There are 18 burial vaults, 12 cists and 6 crypts. The long axis of the vaults, as in the burials, seems to depend on convenience rather than rule. Fifteen vaults, 9 cists and 6 crypts, are in dwellings, 2 cists are in platforms, and 1 cist is in an oratory. They range in size from the two-room burial vault in Str. Q-119a (Burial Vault 9) to quite small vaults only large enough to hold one or at most two bodies. Burial Vault 8, under the altar in Str. P-28b, an oratory, is a circular shaft similar to some of the circular burial cists in the main ceremonial groups, e.g., in Strs. Q-59a and b (Shook, 1954, pp. 259-61). Of the 18 burial vaults, 13 occur under benches in dwellings: 12 under benches in the front room and 1 under a bench in a rear room. Of the 5 remaining, 1 is under an altar in an oratory, mentioned above, 2 are under the floors of low rectangular platforms, and 2 are under floors of dwellings. Access to several burial vaults is through a small doorway or opening, e.g., Burial Vaults 6, 11, and 17. Objects found in burial vaults are few and mostly refuse.

Although Landa says that houses were usually abandoned after burial (quote 10, p. 181), this does not seem to be true at Mayapan. We not only have evidence of graves in houses having been opened and added to, but there are burial vaults built at the time of the construction of the houses. In Str. S-133b there are two almost identical crypts with doorways leading to them. One of these contained the remains of 5 skeletons, while the other had not been used. Structure Q-208, a dwelling, was built over Burial 25, which was in the dwelling below it. All of this argues against the abandonment of houses after people had been buried in them.

5. CACHES

Chapter 5 deals with the 27 caches found in dwellings and the structures associated with them. The term *cache* is applied to one or more objects that appear to have been buried as a votive or dedicatory offering and not to have been associated with a burial. The two types of repositories for caches are simple and cist.

Simple: Cache, without definite outline, in the fill of a building or of an altar in a building, or under the floor of a terrace or court.

Cist: Repository with definite outlines that may be the sides of an excavation into structural fill or bedrock.

There is also a different kind of cache repository or container, namely, a pottery vessel which has been used to hold one or more objects. Several examples have been found. Sometimes the vessel contained nothing. In this report the pottery vessel has been considered one of the objects of the cache and not merely a storage place for a cache, the reason being that the vessel often contains only one or two beads and is itself the most important object.

Some repositories were found with nothing in them. They have been considered caches, and included, as there is little doubt that they once contained objects that have been removed. Caches are numbered from 1 to 27; C. R. stands for Current Reports.

Cache 1 (p. 190; C. R. 36, p. 472)

Location: Below upper floor and resting on lower floor against, and roughly centered on, the back wall in Str. A-1, possibly a shrine (fig. 12,*u*,1).

Objects: Small tripod vessel; 2 jade beads, 4 shell beads in vessel.

Repository: Simple.

Cache 2 (p. 190; C. R. 36, p. 474)

Location: Under floor level in the center of Str. J-71d, a group shrine (fig. 5,*a*,2).

Objects: Remains of small pottery effigy vessel, turtle with human face; jade bead; 2 shell beads; segment of cut bone; 4 flint arrow points. These objects had probably been in the pottery turtle, which was broken.

Repository: Simple.

Cache 3 (p. 186; C. R. 10, p. 187)

Location: Under south face of south central bench in front room of Str. K-52a, a dwelling (fig. 5,*b*,2).

Objects: Nest of pottery vessels crushed together. The sherds rested on a large stone slab and were covered by another. With the broken vessels was a fine clay, possibly potter's clay.

Repository: Simple.

Cache 4 (p. 187; C. R. 10, p. 190)

Location: Under floor of north room of Str. K-52c, a group shrine, and resting on capstones of crypt of Burial 9 (figs. 5,b and 15,h).

Objects: Carved stone Olmec face.

Repository: Simple.

Cache 5 (p. 191; C. R. 36, p. 476)

Location: Below floor of terrace supporting Str. K-67a, on north side of building, centered on main entrance to rear room (fig. 3,2). Structure K-67a is a dwelling.

Objects: Two pottery turtles with human heads in their mouths.

Repository: Simple.

Cache 6 (p. 192; C. R. 36, p. 477)

Location: In altar in Str. P-14a, an oratory (fig. 11,b,2).

Objects: Two small pottery bowls and lids. Each bowl contained a shell bead.

Repository: Simple.

Cache 7 (p. 196; C. R. 25, p. 228)

Location: Directly beneath front edge of plinth in front of center of main entrance to Str. Q-169, a dwelling (fig. 4,a,e).

Objects: Two small pottery figures representing seated jaguars.

Repository: Simple.

Cache 8 (p. 197; C. R. 25, p. 235)

Location: Below floor immediately east of original plinth of north room of Str. Q-172 and about on a line with the center of the entrance (fig. 4,a,d). Structure Q-172 is an oratory.

Objects: Pottery vessel in the form of a kneeling human figure.

Repository: Simple.

Cache 9 (p. 189; C. R. 19, pp. 76-77)

Location: In loose fill 20 cm below floor directly in front of center of center doorway of front room of Str. Q-208, a dwelling (fig. 8,ff).

Objects: Pottery seated human figure, an arrowhead, a minute shell of cowry shape.

Repository: Simple.

Cache 10 (p. 192; C. R. 36, p. 483)

Location: Under floor in doorway leading to rear room in line with doorway to shrine room of Str. Q-244b, a dwelling (fig. 8,hh; C. R. 36, fig. 3,b,17).

Objects: Pottery vase and lid.

Repository: Simple.

Cache 11 (p. 192; C. R. 36, p. 482)

Location: In floor in center of doorway leading to shrine room in Str. Q-244b, a dwelling (fig. 8,hh; C. R. 36, fig. 3,b,8).

Objects: Had been removed before the collapse of the roof.

Repository: Small circular cist with its walls plastered and the opening covered with a stone disk.

Cache 12 (p. 192; C. R. 36, p. 483)

Location: Under floor just north of Cache 10 in Str. Q-244b, a dwelling (fig. 8,hh; C. R. 36, fig. 3,b,18).

Objects: Copal.

Repository: Simple.

Cache 13 (p. 192; C. R. 36, p. 484)

Location: Under court floor directly in front of, and roughly centered on, south side of Str. Q-244d, a group altar (C. R. 36, fig. 3,d).

Objects: Tripod pottery cup in a pottery bowl.

Repository: Cist cut out of bedrock.

Cache 14 (p. 199; C. R. 29, pp. 304, 328, Cache 1)

Location: Under altar against back wall of central rear room of Str. R-86, a dwelling (fig. 6,a,12).

Objects: Pottery effigy vessel representing a rabbit. It contained 2 jade beads and 1 shell bead.

Repository: Cist hollowed out in plaster layer upon which altar rests.

Cache 15 (p. 201; C. R. 29, pp. 318, 329, Cache 9)

Location: Hole in floor, 9 cm in diameter, near north jamb of doorway into Str. R-86b, a possible storage room.

Objects: Chipped limestone disk, or pot lid.

Repository: Cist.

Cache 16 (p. 199; C. R. 29, pp. 300, 328, Cache 3)

Location: In dais in front of, and centered on, altar of Str. R-87, a dwelling (fig. 6,a,4).

Objects: Looted, presumably by departing inhabitants, before collapse of building. Refill contained 196 sherds, 1 flint point, 1 shark tooth, and 7 tiny fragments of paper-thin gold. On top of the refill was a small limestone receptacle in the form of a turtle.

Repository: Simple.

Cache 17 (p. 199; C. R. 29, pp. 300, 328, Cache 2)

Location: In center of altar against back wall of Str. R-87, a dwelling (fig. 6,a,5).

Objects: Probably looted at time building was abandoned. The disturbed fill contained 29 sherds; in the undisturbed fill of the altar near the rear wall was a small unslipped tripod jar.

Repository: Simple.

Cache 18 (p. 199; C. R. 29, pp. 300, 328-29, Cache 4)

Location: In southwest corner of center rear room of Str. R-87 (fig. 6,a,6). The cache was put through the latest floor and sealed by a patch of plaster.

Objects: Looted before collapse of building. Remaining were parts of a jar still in place which contained a small chipped limestone disk, a pot lid, and which undoubtedly had contained other objects.

Repository: Cist.

Cache 19 (C. R. 29, pp. 303, 329, Cache 5)

Location: In bench east of stairway to Str. R-87 (fig. 6).

Objects: Stones, potsherds, and animal bones in a pit cut through the fill of the bench and early floors below suggest that former offerings may have been disturbed. Although nothing definitely indicating a cache was found, it has been considered to be a looted cache.

Repository: Simple.

Cache 20 (p. 200; C. R. 29, pp. 297, 329, Cache 8)

Location: Below floor in front of, and centered on, Str. R-89, a group shrine. It was probably put in at the time of the construction of Str. R-89 (fig. 6,a,3).

Objects: Eighty-two fragments of an effigy bowl. This bowl probably had contained valuables that were removed when the areaway of the group shrine was built.

Repository: Simple.

Cache 21 (p. 201; C. R. 29, pp. 320, 329, Cache 6)

Location: In place on edge of a pit in front of Str. R-90, a group shrine (fig. 6,a,1). It is centered on the shrine.

Objects: Turtle effigy bowl and cover, containing a very fine pointed obsidian flake blade.

Repository: Simple.

Cache 22 (p. 201; C. R. 29, pp. 320, 329, Cache 7)

Location: Under plinth on south side of Str. R-90, a group shrine (fig. 6,a,2).

Objects: Turtle effigy bowl containing 2 fragments of burned bone and a pointed obsidian flake blade.

Repository: Simple.

Cache 23 (p. 193; C. R. 36, p. 486)

Location: In center of platform in front of altar in Str. R-91, an oratory (fig. 11,g,1).

Objects: None. The floors of the platform had been cut through directly over the cist before the collapse of the roof, possibly to remove some offering.

Repository: Cist.

Cache 24 (p. 193; C. R. 36, p. 486)

Location: In altar of Str. R-91, an oratory (fig. 11,g).

Objects: Pottery bowl that once had three legs and a pottery effigy vessel representing a human face.

Repository: Simple.

Cache 25 (p. 202; C. R. 37, p. 535)

Location: In altar of Str. Z-50b, possibly a dwelling (fig. 7,a).

Objects: Broken miniature tripod cup and a jade bead. Probably the bead was originally inside the cup.

Repository: Simple.

Cache 26 (p. 202; C. R. 37, p. 537)

Location: Below altar of Str. Z-50c, a building possibly used for residential as well as ceremonial purposes (fig. 7,a).

Objects: Removed, probably by inhabitants.

Repository: Rough cist 10 to 15 cm in diameter.

Cache 27

Location: In fill of Str. K-20b, a platform.

Objects: Incurved rim pottery bowl covered with flat stone.

Repository: Simple.

Discussion

Dedicatory or foundation offerings in buildings and under stelae occur throughout Maya history. As Thompson points out, it was a general Maya practice to place a cache in the substructure of every important building (J. E. S. Thompson, 1939, p. 192). Tozzer expresses the same opinion: "From the fact that practically every structure extensively explored at this site [Chichen Itza] contained some sort of cache, the custom of a foundation offering seems to have been common" (Tozzer, 1957, p. 85). The literature is full of references to, and descriptions of, caches found in buildings of various types in ceremonial centers and under stelae, but little has been mentioned about such offerings in dwellings or structures associated with them. Wauchope does describe new-house ceremonies in modern Indian dwellings where caches were placed in a hole under the floor and the hole was then sealed with mud and clay. He suggests that a comparable custom might be found in ancient times (Wauchope, 1938, pp. 143-44). At Mayapan 27 caches were found in connection with this type of building.

Of the 27 repositories found, 20 were of the simple type and 7 were cists. It is a fair assumption that the simple ones were probably put in at the time of the construction of the building or of any addition to the building in which they were found. If the repository for a cache were put through a floor or the top of a bench or altar, it would have to be excavated out of the fill; as a result, it would have definite sides which would make it, according to our definition, a cist.

Caches were found in dwellings, and in oratories and group shrines and group altars associated with dwellings. Fourteen, or more than half, of the caches were directly associated with dwellings; one of these buildings, however, Str. Z-50c, is not a typical dwelling and may have served a dual purpose, residential and ceremonial. Of the remaining 13 caches, 1 was in a possible shrine, Str. A-6, probably affiliated with Group A-2, 5 were in or directly associated with group shrines, 4 with oratories, 1 with a group altar, 1 in a platform in a house group, and 1 in a storage room, Str. R-86b.

There does not seem to be any specific location for caches in structures; they may occur almost anywhere. There does, however, seem to be a tendency to locate them along the central axis. Some occur directly in front of a structure under the terrace or floor supporting it (Caches 5, 8, 9, 13, 20, and 21), some under the floor inside a structure (Caches 1, 2, 4, 10, 11, 12, 15, 18, and 27), others in altars inside dwellings or oratories (Caches 6, 14, 17, 24, 25, and 26), in a platform or dais in a building (Caches 16 and 23), in benches in and outside dwellings (Caches 3, 19), and under the plinth of a building (Caches 7 and 22).

Various kinds of objects were cached. Sometimes they were simply placed in the fill, but frequently they were put in a pottery vessel. There were 15 caches in which pottery vessels were found that may have held cache objects. Of these 7 actually contained objects and 2 others had undoubtedly contained objects found near by that had probably spilled out. The other 6 may have had their contents removed or have contained something that had disappeared, such as a liquid. The cache vessels were in the form of tripod vases or cups, bowls, jars, and effigy vessels. The effigy vessels depicted humans, turtles, and a rabbit. Other objects found were pottery turtles and jaguars, a pottery human figure seated, a pottery human figure kneeling, a limestone turtle, fragments of gold leaf, shark teeth, copal, an Olmec face carved in stone, and worked jade, shell, flint, and obsidian. Evidently the turtle was important in caches, for it was represented six times.

There is ample evidence at Mayapan that caches, like burials, were looted, which may account for the fact that so little of value was found. Nine caches were probably looted, and there is no doubt that most of these, if not all, were robbed by the ancient Maya themselves. Proskouriakoff and Temple give several examples of caches that definitely were robbed by departing inhabitants, who made excavations with the purpose of removing valuables. All these excavations were neatly executed exactly over the caches (C. R. 29, p. 300).

Most of the caches were probably placed as dedications to the buildings with which they were associated, but it is likely that some, such as those found in altars in buildings, may have been votive offerings rather than having been dedicatory.

It is interesting to note that caches were not found in the 8 house mounds excavated at Uaxactun (A. L. Smith, 1950, p. 91), nor were any formal caches found in the house mounds in the Belize River Valley, British Honduras, investigated by G. R. Willey (verbal information). All of the foregoing were earlier than the post-Classic period. Willey has told the author that a cache of flints was discovered by the estate manager in a large mound at Barton Ramie, but that there is a possibility that this structure, being larger than the average house mound, had been used in some ceremonial capacity. Although evidence is hardly sufficient as yet, there is a possibility that dedicatory or votive caches were seldom if ever placed in dwellings during the

Classic period, and that this custom may have come into general practice along with the growing importance of worship in the family group during the Late post-Classic period.

6. CONCLUSIONS

The pottery found at Mayapan indicates that people had lived in or around the site from pre-Classic times until the fall of the city around A.D. 1450. Little evidence of pre-Classic or Early Classic occupation is left, but in the Late Classic period, which is supposedly the time of Puuc culture, Mayapan seems to have been a center of some small importance. This period is widely, though not richly, represented by pottery and Puuc-like stones. The stones were found re-used in many of the buildings, both ceremonial and secular, but no trace of a Puuc-style structure from which they could have been taken was discovered. During the early part of the post-Classic period, which saw the growth of Toltec Chichen Itza, a situation somewhat similar to the preceding period seems to have existed at Mayapan. Pottery remains are widespread; on the other hand, little if any building stone or sculpture of the time has been identified. It was not until the latter part of the post-Classic period, from about 1250 to 1450, that Mayapan reached the height of its greatness.

Supposedly the hegemony of Mayapan lasted 200 years, from its founding by Kukulcan to the overthrow of the powerful Cocom family and the sacking and abandonment of the city. There is still evidence of the destruction and pillaging that took place. Many masonry buildings show, from the charred remains of roof beams, that they were deliberately burned, and there is a great deal of proof that caches and burials were robbed of their most valuable contents.

Just what the growth of Mayapan was from the time of its founding by Kukulcan is difficult to say. There is evidence that the earliest part was the main ceremonial group and its immediate environs. This would be consistent with the early accounts that say the people first built their temples and other religious buildings and the houses of the lords and high priests, and then the houses for servants and people of less importance. The temples and houses of the lords were said to have been surrounded by a wall, of which no trace could be found. Eventually the Great Wall, with its seven major and five minor gateways, was built, encompassing 4.2 sq km. The city undoubtedly grew larger as time went on, and reached its peak just before its abandonment.

R. E. Smith has been able to divide the Mayapan ceramic period into two phases, early and late. Unfortunately, this was of no assistance in trying to establish architectural differences in dwelling-type structures. In virtually all cases secular structures had sherds later than the early phase. It is likely that none of the dwellings or associated structures that we investigated, some 4000, was very old in the life of the city, and it is quite reasonable to believe that the houses with thatch roofs and perishable walls on masonry foundations had to be rebuilt at least every 20 or 30 years. As these formed the vast majority of buildings, our survey dealt with the city as it appeared in its last stages, and probably all, or nearly all, the structures we recorded were in use at that time. Our account is therefore a description of Mayapan as it was during the last half century, at most, before the destruction and abandonment that followed.

Mayapan was truly an urban city. Its roughly 12,000 inhabitants living within the city wall were dependent for their food and probably many other commodities upon the towns and rural districts under the rule of the lords who lived in the city. Landa mentions that the majordomos or caluacs of the lords had the towns of the latter send them birds, maize, honey, salt, fish, game, cloth, and other things that the lords might need. There is no doubt that the city or its immediate surroundings could not even begin to supply the requirements of so large a population. J. E. S. Thompson (1957, p. 622) points out that the scarcity of the representations of Chac on effigy incensarios may reflect the position of Mayapan as a political capital and urban center. Chac, the rain god, was the most important deity in the Maya pantheon and all-important to agriculturists. The population of Mayapan consisted of a relatively small group of high priests and lords of the towns over which the city ruled, the families of the important rulers, petty officials, servants, merchants, artisans, and Mexican mercenaries brought in by the Cocom to enforce his control.

The city of Mayapan was built around the main ceremonial and civic group with the Temple of Kukulcan in its center. Four minor religious groups lie in the eastern half of the site but could have held little importance compared with the Main Group. The nonsecular buildings in all these groups comprise only about 3.5 per cent of the total number of structures at Mayapan, and the groups in which they are located occupy only about 1.5 per cent of the area within the city wall. The majority of the 30-odd most elaborate residential groups were close by or within the vicinity of the main center. These undoubtedly housed the great lords, high priests, and most influential people. The remainder of the population was closely settled throughout the rest of the site, the southwestern part, aside from the area around the Main Group, being the most densely built up.

There appears to have been a minimum of city planning at Mayapan. Houses seem to be scattered about haphazardly without any attempt at alignment or order. Undoubtedly the main reason for this unorderly assemblage is the nature of the terrain, which is rough and covered with hillocks ranging from 1 to 4 m in height. These raised areas were considered the most desirable locations for living, and, as their distribution was most irregular and practically all of them were occupied, the resulting pattern was without order. Of course, the number of rises was inadequate to take care of the whole population, so that the less fortunate had to build in the low areas. In contrast to the lack of regularity in the distribution of houses, there was great consistency in their orientation. Landa is quite correct in his statement that they faced east, north, and south, and few, if any, toward the west.

Most houses were associated in groups of one or more structures, the maximum being nine. Nearly all single dwellings or groups were surrounded by low boundary or property walls. It was only in the ceremonial centers that boundary walls seem to have been rarely used. With few exceptions the spaces between these walls defining the limits of household units were the only excuse for streets. The result was a confused and unbelievable maze of alleys in which to find one's way around. Only two lanes of any length and independent of boundary walls were found, although a great deal of effort was spent in trying to locate main roads leading from the gateways to the principal religious and civic center. The outstanding road is a sacbe leading from one of the largest dwelling groups to what appears to have been a partly religious group.

A good water supply was all-important to a city of the size of Mayapan, and the choosing of this particular location was probably in part due to the great quantity of cenotes to be found there. The map of Mayapan shows 26 within the city wall, 19 of which have water today. Landa says that if there were only a few wells they were near the houses of the lords. At Mayapan all the cenotes, except 3 that were associated with ceremonial groups, were accessible to all. None was confined within the property walls of family groups. Some had lanes leading to them, one in particular which could be approached from four directions by streets. Several cenotes were surrounded by low walls about 3 to 4 m from the entrance. The large number of cenotes in the southwest part of the site probably accounts for its being so thickly settled. The ceremonial platforms in Cenote X-Coton and the structures at the rim of Cenote Ch'en Mul in the main ceremonial group would tend to indicate that some sort of cenote cult was practiced at Mayapan.

Having discussed the general aspects of the city, let us turn to the domestic side: the family and the houses and groups they lived in. About one-third of the estimated 2100 dwellings at Mayapan are not associated with other structures. The balance are found in groups, mostly of two or three constructions although a few have as many as seven and there is one with nine. Roughly three-quarters of the groups are on natural rises that have been faced with rough stone and filled in to make them level on top.

The vast majority of dwellings at Mayapan, in fact all but about 50, have only two rooms. This was the standard house type which so clearly resembles Landa's description. It had a front and back room, with one or more doorways leading to the back room through the medial wall and a small exit doorway in the back room. The front room had benches against the medial wall flanking the doorways to the back room, and its front side was open. The size of this simple building, and the materials used in its construction, varied greatly. The homes of the poorer and less important people were small, with a single doorway leading into the back room. They often had no masonry foundation walls, especially in the back room.

The houses of the wealthier inhabitants increased in their size and elaborateness in accordance with the importance of the occupant. Besides being larger, their dwellings had more doorways to the back room, and some had end rooms and rooms set aside for worship. Masonry foundation walls supported the upper wooden walls in most of them, and wooden posts helped to support a thatched roof. There are, however, some hundred houses with masonry columns and 50 with beam-and-mortar roofs. Some of these are quite pretentious and might be called palaces. There is evidence that a few had decoration in their upper façades formed by carved Puuc-like stones, and, according to Landa, their walls were elegantly painted. As a whole, there is little left to show how their houses were decorated.

As might be expected, the masonry in the more important houses was better, in general, than that found in the poorer dwellings. More well cut, fine-grained, Puuc-style stones were used, and more care was taken in their construction, especially in those that had high masonry walls supporting beam-and-mortar roofs. Nevertheless, at best the masonry was rough and crude compared with the beautifully cut and faced stones and fine workmanship of the Puuc architecture. The limestone was coarse and poorly worked as a rule, and exposed surfaces depended on a thick layer of plaster to cover their roughness. Building materials of limestone, sascab, and wood were plentiful, and tools, except for a few of imported stone and obsidian, were made of the local stone, wood, and bone (see part 4).

About half of the groups have only one dwelling, indicating a single family unit. Of the remainder, a third had two dwellings, and the balance mostly three except for a few groups of four or more. If there is more than one dwelling in a group, one is always bigger and better than the others and presumably was occupied by the head of the family. The other houses were probably occupied by relatives or servants. It is likely that, when there was only one other dwelling, it housed the daughter and son-in-law of the head of the family, and that only in the larger groups, where the wealthiest people lived, were servants lodged.

Besides dwellings, there were other associated structures whose functions we know, kitchens, oratories, and group shrines and altars. Although few kitchens could definitely be designated as such on the basis of the evidence found, there is little doubt that exterior benches and many of the small platforms were used for that purpose. The purpose of many platforms and other constructions could not be solved. The probability is that they were used for putting up travelers and other visitors, for storage purposes, or for workshops.

Besides the lords, their families, the high priests, lesser officials, servants, merchants, and mercenaries, Mayapan must have been occupied by a population employed in a great variety of occupations: masonry, stone cutting, wood carving, weaving, tool making, and many other pursuits. Unfortunately little is left to indicate where these many trades were carried on. In only one place was there sufficient evidence to indicate where a workshop had been.

In the religious practices engaged in at Mayapan we are on much firmer ground. We have good evidence in the late history of the site that there was an emphasis on religion in the home and family group at the expense of the organized religion of the ceremonial center. The most important groups had their own family oratories, to which the men retired for certain religious rites and ceremonies. Ancestral cults probably were carried on in the oratories, and often an ossuary was found below the floor. Some homes had rooms, which we have called shrine rooms, set aside for similar practices. There are several whole groups, part ceremonial and part domiciliary, that appear to have served such purposes. One such group is connected to an imposing residential assemblage or palace by a causeway, and it has been suggested that it served the particular family living in the palace. Many groups have group altars and group shrines in their courts where family idols or images of particular gods may have been honored and worshipped. Some hundred homes were found with an altar built against the back wall of the rear room, and probably many more had them. All this concentration on religious practices carried on in the home and family group shows a change, a breaking away from a centralized sacerdotal control such as was enjoyed by the great Maya cities of the Classic period. These new ideas and customs were due to foreign, presumably Mexican, influence.

Although several isolated platforms with columns were found, open buildings that could have been bachelor or men's houses where boys of marriageable age lived apart, according to Landa, it would seem that the colonnaded halls, most of which occur in the main ceremonial group, were used for this purpose. They probably not only housed the young men but also served as places of education and religious training.

A group inhabited by one of the nobility might have been composed of the following structures. A main house where the lord lived, several houses of less consequence where a daughter and son-in-law and servants resided, a kitchen, a family oratory, and a group shrine to house the particular idols important to the family worship. There might also be a house for the lord's overseer or caluac, and another for the supplies he ordered from the towns over which his master ruled. There is some evidence that pens may have been built to keep small animals and birds until they were needed. Possibly some of the small stone circles or enclosures behind houses were used for this purpose, or they may have been filled with earth and served as small kitchen gardens. There is little soil at the site, most of the ground being completely bare limestone or covered with only a few centimeters of earth. In order to have a garden, especially on a raised area, it would be necessary to employ some such method.

The majority of the people probably lived very simply in their two-room, thatch-roofed houses. Inside their property wall they undoubtedly had a kitchen and possibly another dwelling which housed relatives. Many of them may have had a small altar in the house for family worship, although this may not always have been true, as the poor probably paid less attention to family worship than the nobility.

A problem of no small importance in a city with as large and crowded a population as Mayapan must have been the disposal of refuse. Some system must have been employed for its removal. In the present-day villages of Yucatan the buzzards, dogs, and pigs take care of the situation; no family is without at least a dog and a pig. There seems to be no reason why the same disposal system could not have been in use in ancient times, but it should be added that there is no clear-cut evidence of the domestication or taming of pigs in pre-Columbian times.

No regular burial ground or cemetery was found at Mayapan. One would hardly be expected, for the shallow soil of the area does not lend itself to such a purpose. Burials were customarily within houses or oratories or occasionally outside dwellings under an associated court or platform floor. Those in dwellings are almost always in the front room under the floor or benches, almost never in the back room, possibly because the back room was more often used for sleeping. In oratories ossuaries were found under the floor in front of the altar. Landa says that houses were usually abandoned after burials, but this does not seem to have been true at Mayapan. There is, indeed, considerable evidence to the contrary in that vaults, apparently for burial, were often constructed at the time of the building of a house, occasionally two in a dwelling, and they were sometimes reopened after an original burial for later interments.

The type of grave varied greatly from simple interments in the fill of a structure to placing the body in an elaborate stone-lined, vaulted tomb. The finer graves, as one would expect, were in the better houses. In oratories the graves were cists and crypts that did not compare with many of the well made vaults in dwellings.

Burials were single and multiple, flexed and extended, and there seems to have been no rule about which way the body headed or faced, although more headed east than any other direction. Cremation was rare. Burned bones were found in two burials in dwellings, and ashes in urns were found in two family oratories. Several skulls showed artificial cranial deformation, and one filed tooth was found.

Although human sacrifice was practiced at Mayapan, there is no definite evidence that it was carried on in the family group or that victims were buried in dwellings or family oratories. Nor is there evidence that slaves or wives were buried with a man when he died, no matter how important he may have been. On the other hand, if the monument in the center of the court of Group Z-50 is a ''sacrificial stone,'' and it is shaped like one, there would be the possibility of human sacrifice being carried on outside the ceremonial center, for although this group is not residential in the true sense of the word, it has been considered as possibly a sort of glorified oratory or place of retreat and worship for the family living in the large residential group at the other end of the sacbe that connects them. Landa says that the nobles and people of high esteem were burned, their ashes were put in urns, and temples were built over them. This may have been true for some, but there is no doubt that many of the nobility were buried in their own homes and not cremated. Here again we have emphasis on the family group as against the ceremonial center.

The furniture found in graves, whether in dwellings, family oratories, or for that matter in religious structures in ceremonial groups, was little and far from impressive. If anything, the graves in dwellings seem to have been the richer. The poorness of grave material may in part be due to looting, but even in undisturbed tombs little of value or beauty was found. In only a few graves were objects found that might indicate the profession of the deceased, although Landa says that when a person was buried instruments of his occupation were buried with him.

Caches, although usually associated with ceremonial structures, were found at Mayapan in dwellings, family oratories, group shrines, and group altars. More than half of the 27 caches discovered were in dwellings. Most caches probably were placed as a dedication at the time of the construction of a building, but a few, especially those found in altars, may have been votive offerings. As was true for grave furniture, little of value was found in caches, which, again, may partially be due to robbing. Owing to the lack of enough work in house mounds at other sites, there is insufficient evidence, but there is a possibility, that the placing of caches in dwellings is a custom that did not come into general practice until late, along with other observances that indicate the growing importance of worship and ceremony carried on in the family group.

Considerable time and effort were devoted to discovering the distribution of the typical two-room (front and back) dwelling found at Mayapan. A survey extending 20 km in all directions from the city showed that at only two sites were there houses of this type as far as 12 km away. These were northwest of Mayapan; in all other directions they disappeared within 3 or 4 km. Besides this investigation more distant sites were visited. Only at Chichen Itza were there any dwellings, and here only three, that approached the plan typical of Mayapan. At Tulum, on the east coast of Quintana Roo, there are several buildings that resemble the more elaborate dwellings of Mayapan. Obviously, the Mayapan house plan is late, for it does not occur in any of the Puuc sites we visited.

A fact well demonstrated at Mayapan is that the high cultural standards of the Maya of the Classic period had sadly degenerated by the beginning of the fifteenth century. New religious concepts were introduced, and there was a rise of militarism. Stone carving and many of the arts deteriorated, owing to the unrest of the times. The architecture at Mayapan shows this degeneration as much as anything. There was evidently no time to waste on selecting fine-grained stone and cutting and facing it the way building stones were finished in the Puuc sites or at Chichen Itza. Limestone was quarried without regard to quality, and was roughly shaped into blocks and slabs for building. In order to make the walls appear smooth, a heavy coat of plaster had to be applied. It was poor construction, and it did not withstand the destruction of time like the earlier, well constructed buildings of the Classic period. There seems to have been little striving for permanence, just window dressing and false fronts. In spite of this, however, Mayapan must have presented an impressive picture, encompassed by its great wall with seven major gateways, its main ceremonial and civic center dominated by the Temple of Kukulcan and surrounded by some 4000 structures, the elaborate dwellings of the nobility with their beam-and-mortar roofs, and the hundreds of thatch-roofed houses of the people, the majority resting on rises and surrounded by boundary walls. A coat of paint will hide many faults, and the ample use of plaster at Mayapan undoubtedly accomplished the same purpose.

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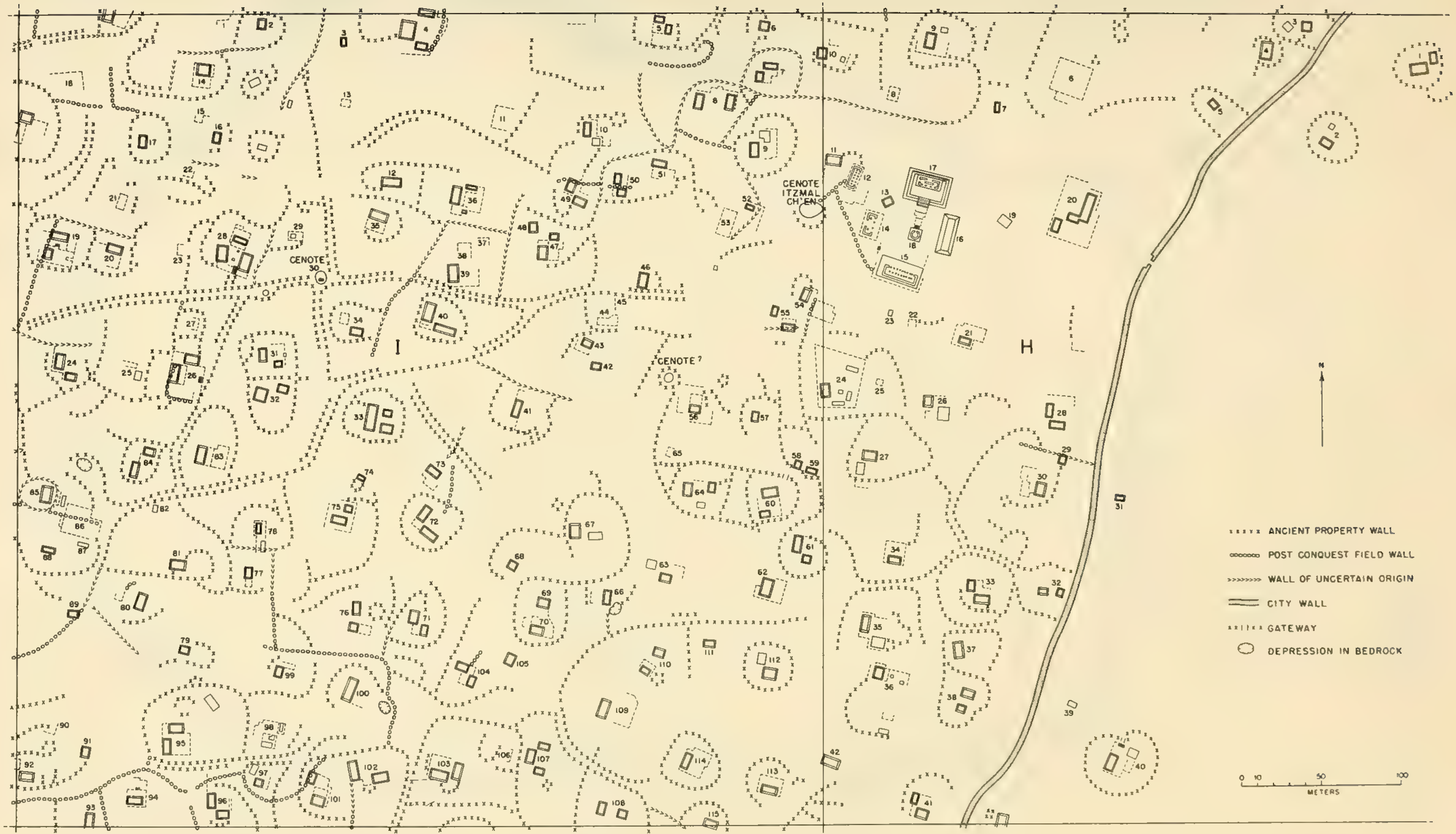

H
I
CENOTE ITZMAL CH'EN
CENOTE
CENOTE ?
N
ANCIENT PROPERTY WALL
POST CONQUEST FIELD WALL
WALL OF UNCERTAIN ORIGIN
CITY WALL
GATEWAY
DEPRESSION IN BEDROCK
0 10 50 100
METERS

FIG. 1

FIGURE 2. Group A-3, plan and sections.

A-3a, terrace.

A-3b, platform with wall along north and west sides and bench in northwest corner.

A-3c, dwelling.

A-3d, dwelling.

A-3e, rough circle of stones.

A-3f, dwelling.

1, entrance into Group A-3 (fig. 22,h). 2, Burial 1, under passageway of Str. A-3c. 3, Burial Vault 1, under south bench of Str. A-3c (fig. 15,a).

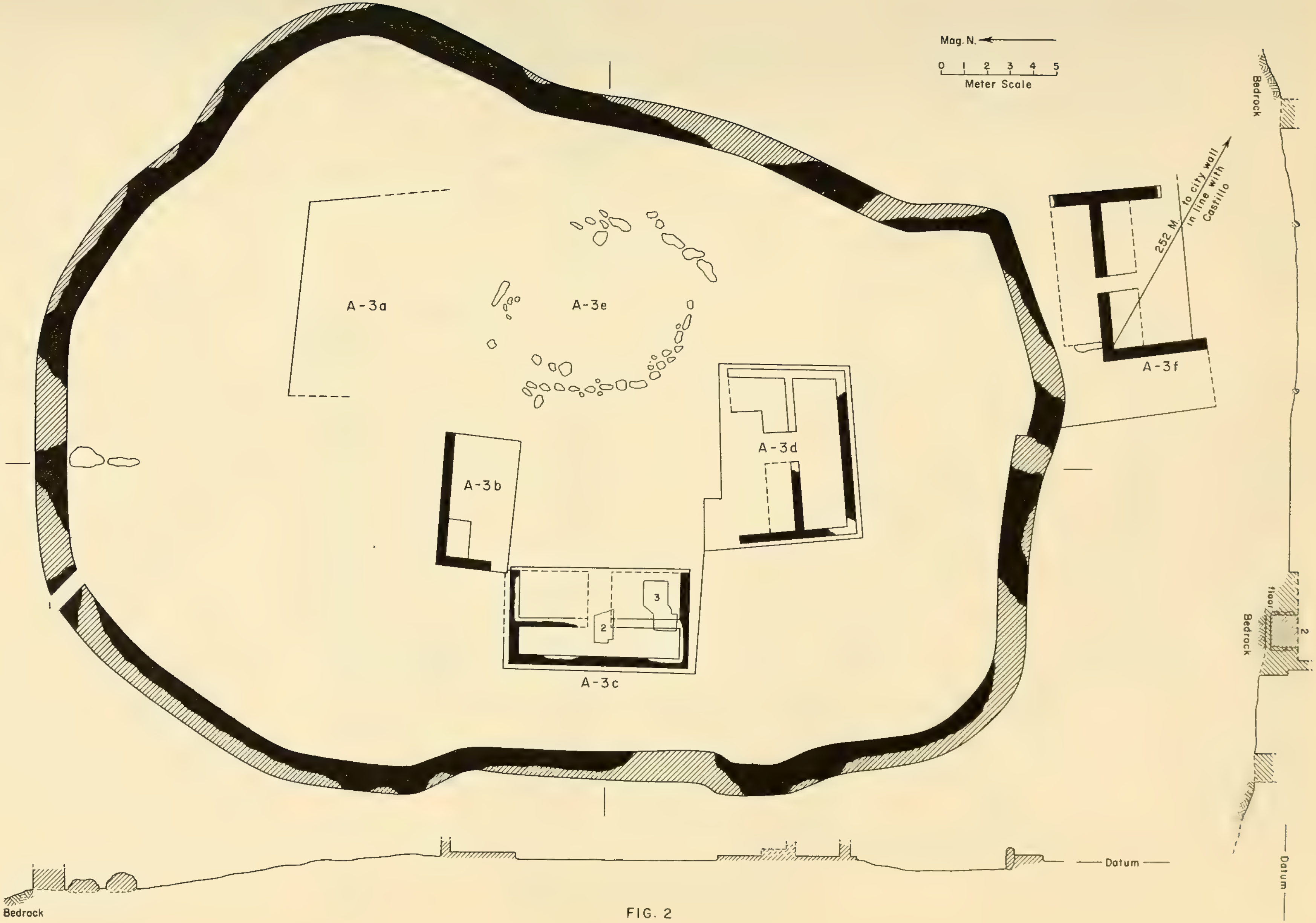

Mag. N.
0 1 2 3 4 5
Meter Scale
A-3a
A-3e
A-3b
A-3c
A-3d
A-3f
2
3
252 M. to city wall in line with Castillo
Bedrock
floor
Bedrock
2
Datum
Datum
Bedrock

FIG. 2

FIGURE 3. Group K-67, plan and sections.

K-67a, dwelling and associated terrace.

K-67b, dwelling.

K-67c, dwelling.

K-67d, group altar.

1, Burial 10, under passageway of Str. K-67a. 2, Cache 5, in terrace in front of Str. K-67a. 3, cist under bench in Str. K-67a, Burial Vault 7. 4, blocked doorway and filled passageway between benches.

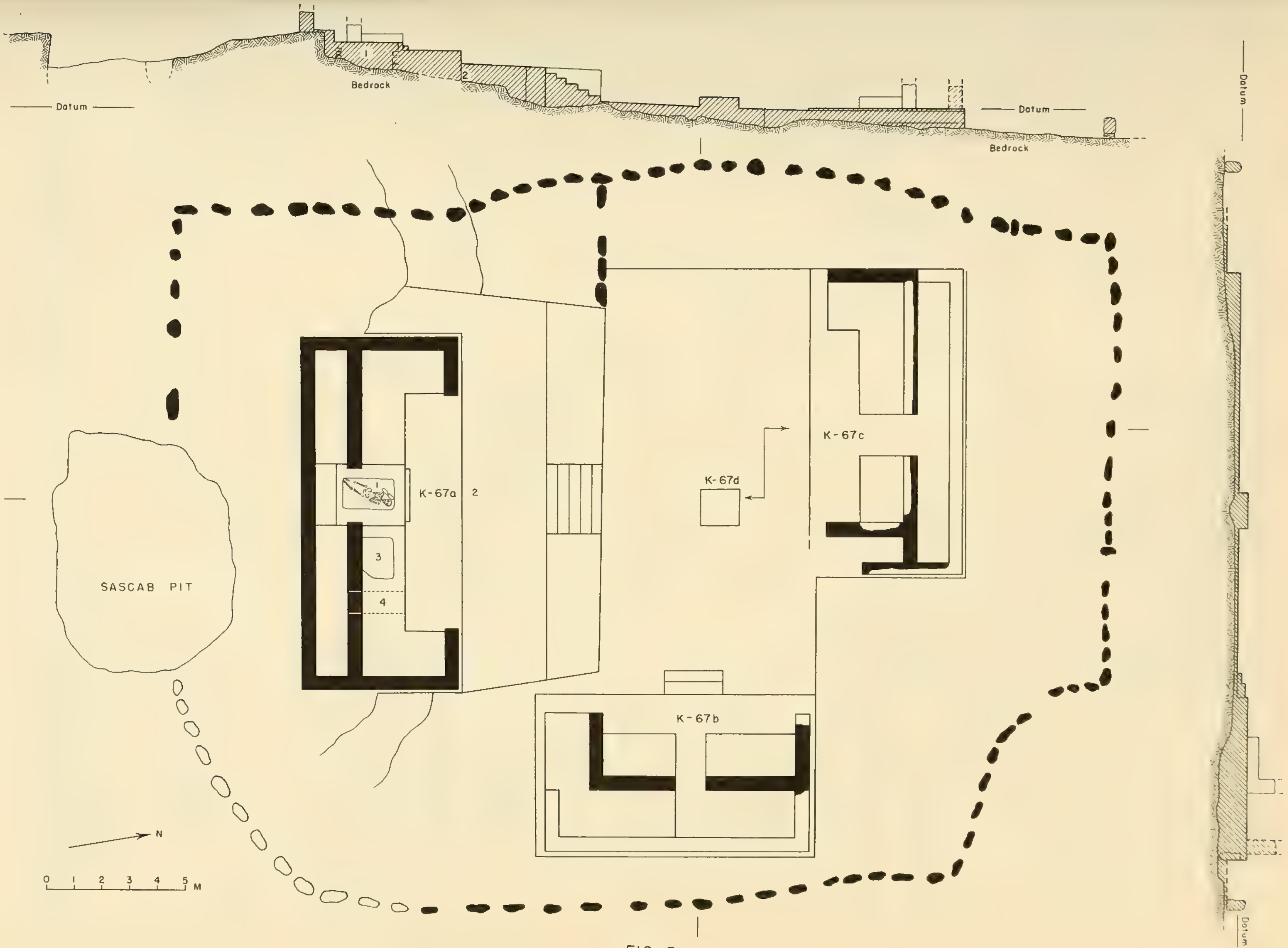

Datum
Bedrock
1
2
3
Datum
Bedrock
Datum
Datum
K-67a
2
1
3
4
K-67b
K-67c
K-67d
SASCAB PIT
N
0 1 2 3 4 5 M

FIG. 3

FIGURE 4. Group Q-169 to Q-173, plans and sections.

a: Plan of group.

Q-169, dwelling (figs. 19,a, and 23,g).

Q-170, group shrine (fig. 18,e).

Q-171, dwelling.

Q-172, oratory (fig. 19,h).

Q-173, dwelling (?).

Q-173a, storage room (?).

1, Burial 22 (fig. 23,g), in Str. Q-169. 2, Burial 24, in Str. Q-172. 3, depression in floor of Str. Q-172.

b: Str. Q-170, section (C-C′) and front elevation (fig. 18,e).

c: Str. Q-171, section (A-A′).

d: Str. Q-172, section (B-B′).

e: Str. Q-169, section (D-D′).

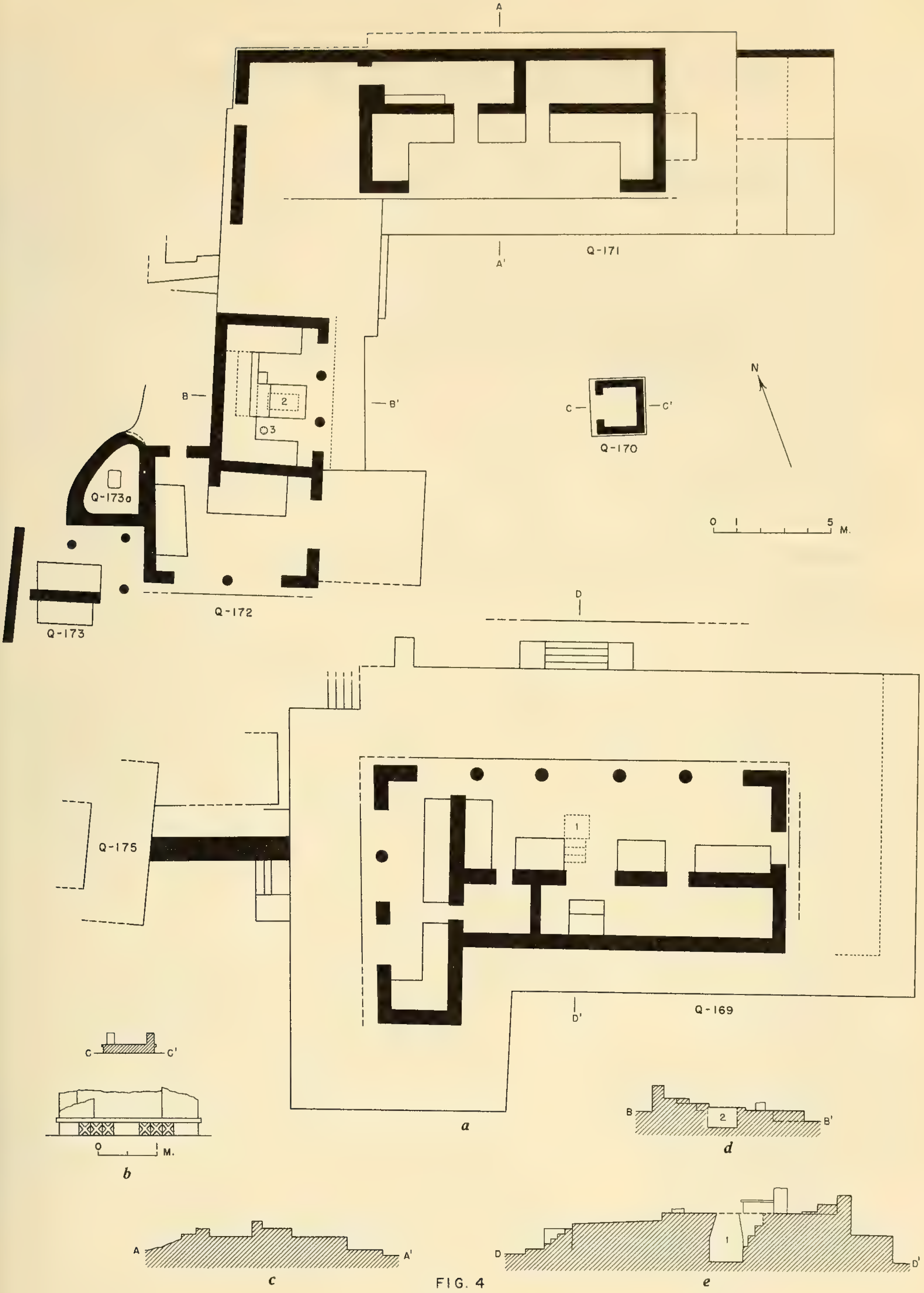

A
A'
Q-171
B
B'
2
3
Q-173a
Q-172
Q-173
C
C'
Q-170
N
0 1 5 M.
D
D'
Q-175
1
Q-169
a
C C'
0 M.
b
B 2 B'
d
A A'
c
D 1 D'
e

FIG. 4

FIGURE 5. Groups J-71, K-52, S-30, Z-4, Z-152, and S-26, plans.

a: Plan of Group J-71

J-71a, function unknown.

J-71b, dwelling.

J-71c, dwelling.

J-71d, group shrine.

1, pottery neck in floor of Str. J-71b. 2, Cache 2, in Str. J-71d.

b: Plan of Group K-52 (fig. 20,h).

K-52a, dwelling (fig. 15,g).

K-52b, dwelling.

K-52c, group shrine (fig. 15,h).

K-52d, function unknown.

1, addition to terrace under construction. 2, Cache 3, in Str. K-52a.

c: Plan of Group S-30

S-30a, dwelling.

S-30b, dwelling.

S-30c, dwelling.

S-30d, group shrine.

d: Plan of Group Z-4.

Z-4a, dwelling.

Z-4b, dwelling.

Z-4c, dwelling.

Z-4d, group altar.

e: Plan of Group Z-152.

Z-152a, dwelling.

Z-152b, dwelling.

Z-152c, group shrine.

f: Plan of Group S-26.

S-26a, dwelling.

S-26b, dwelling.

S-26c, function unknown, possibly a kitchen.

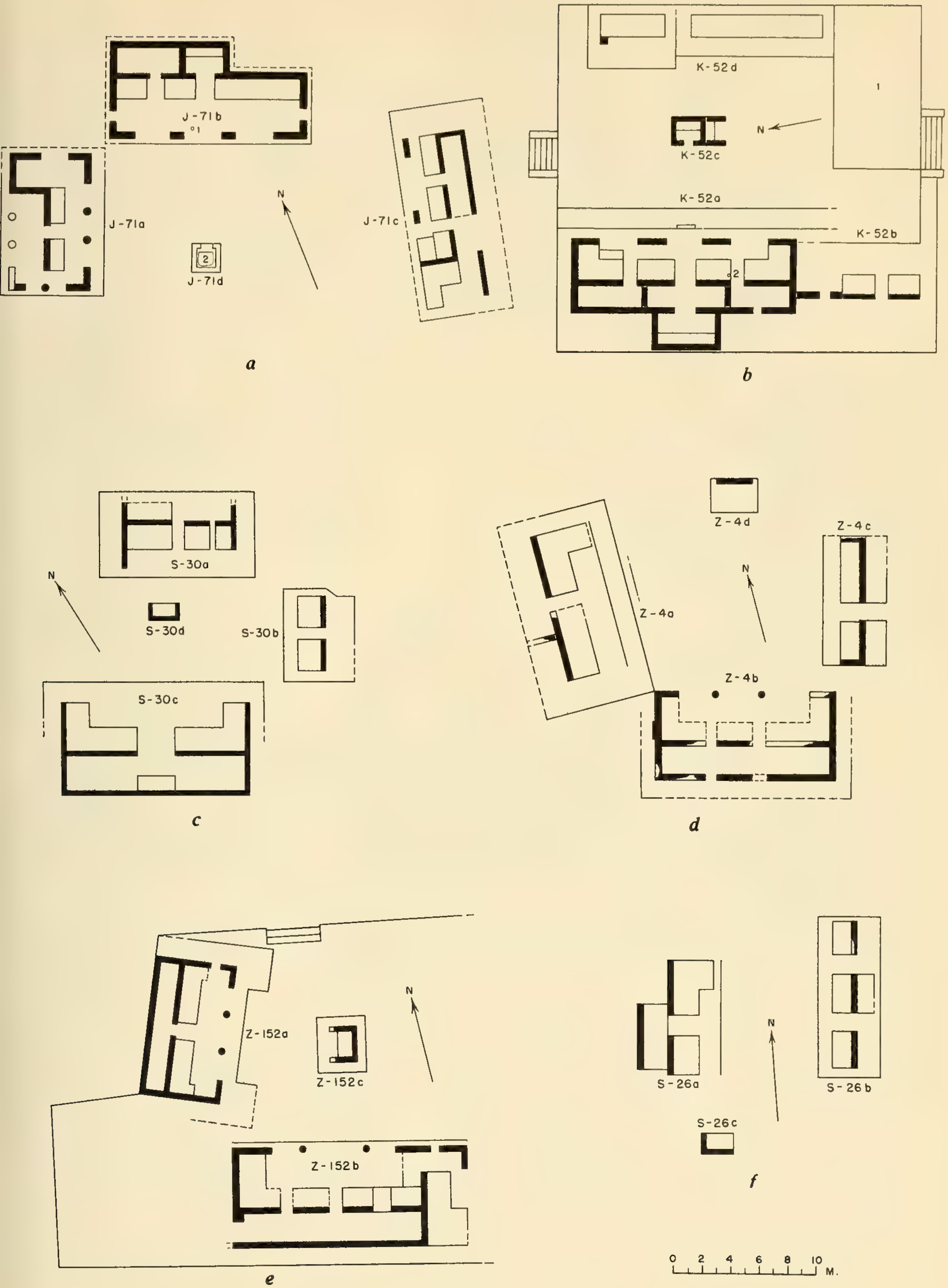

J-71b
1
J-71a
2
J-71d
N
J-71c
a
K-52d
1
K-52c
N
K-52a
K-52b
2
b
S-30a
N
S-30d
S-30b
S-30c
c
Z-4d
Z-4c
N
Z-4a
Z-4b
d
Z-152a
Z-152c
N
Z-152b
e
S-26a
N
S-26b
S-26c
f
0 2 4 6 8 10 M.

FIG. 5

FIGURE 6. Group R-85 to R-90, plans and sections.

a: Plan of group.

R-85, dwelling.

R-85a, group shrine.

R-86, dwelling.

R-86a, kitchen (fig. 21,e and f).

R-86b, possibly for storage (fig. 21,g).

R-87, dwelling (figs. 19,b and 20,g).

R-88, dwelling.

R-89, group shrine (fig. 18,f).

R-90, group shrine.

1, Cache 21. 2, Cache 22, 3, Cache 20 and stone rings set into areaway floor (fig. 18,f). 4, Cache 16. 5, Cache 17. 6, Cache 18. 7, drain formed by neck and body of jar set under floor. 8, hearth. 9, probable location of second hearth. 10, posthole. 11, skeleton of child in crevice of bedrock, Burial 31. 12, Cache 14. 13, Burial 30. 14, Burial 29. 15, niche in stairway block. 16, niches in secondary wall of chamber (fig. 21,g). 17, column drums placed against wall of platform for its ascent.

b: Str. R-89, Section (A-A′) (fig. 18,f).

c: Sections through vaulted passageway leading into group from the south (fig. 21,h).

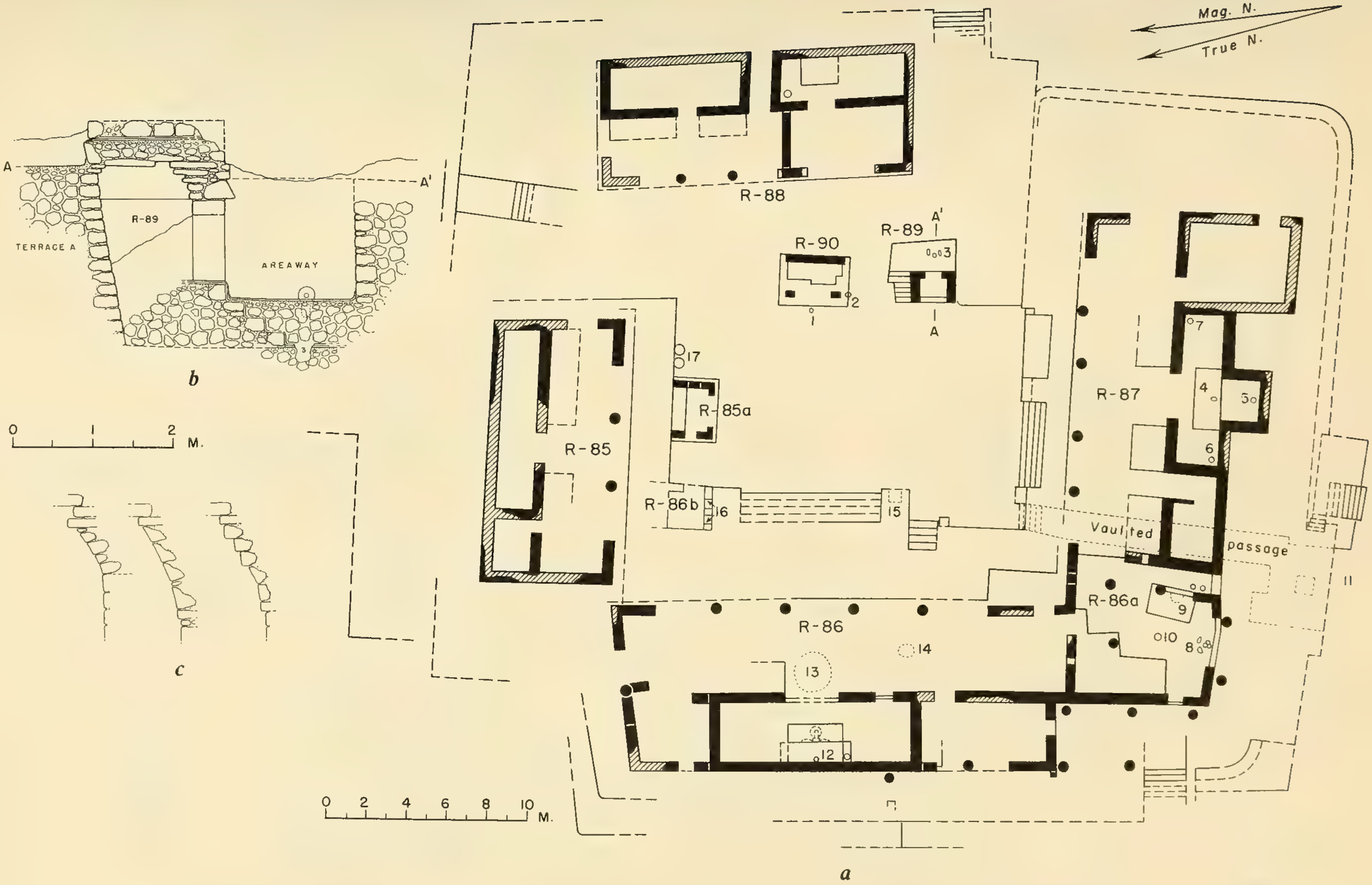

Mag. N.
True N.
R-88
R-90
R-89
A'
A
3
2
1
17
R-85a
R-85
R-86b
16
15
R-87
4
5
6
7
Vaulted passage
R-86a
9
8
10
11
R-86
13
14
12
0 2 4 6 8 10 M.
a
A
A'
R-89
TERRACE A
AREAWAY
3
b
0 1 2 M.
c

FIG. 6

FIGURE 7. Groups Z-50 and K-79 and three modern house groups and property walls at Telchaquillo.

a: Plan of Group Z-50 and section through Str. Z-50a.

Z-50a, function unknown.

Z-50b, dwelling.

Z-50c, dwelling (?).

Z-50d, group altar.

1, chamber at ground level. 2, sacrificial stone.

b: Plan of Group K-79.

K-79a, dwelling (?) (fig. 19,k).

K-79b, probably an oratory.

K-79c, dwelling.

K-79d, group altar.

c: Plan of modern house group.

1, dwelling. 2, dwelling. 3, dwelling. 4, kitchen. 5, chicken pens. 6, well.

d: Plan of modern house group.

1, dwelling and kitchen. 2, storage house. 3, dwelling. 4, well.

e: Plan of modern house group.

1, dwelling. 2, dwelling. 3, kitchen. 4, well.

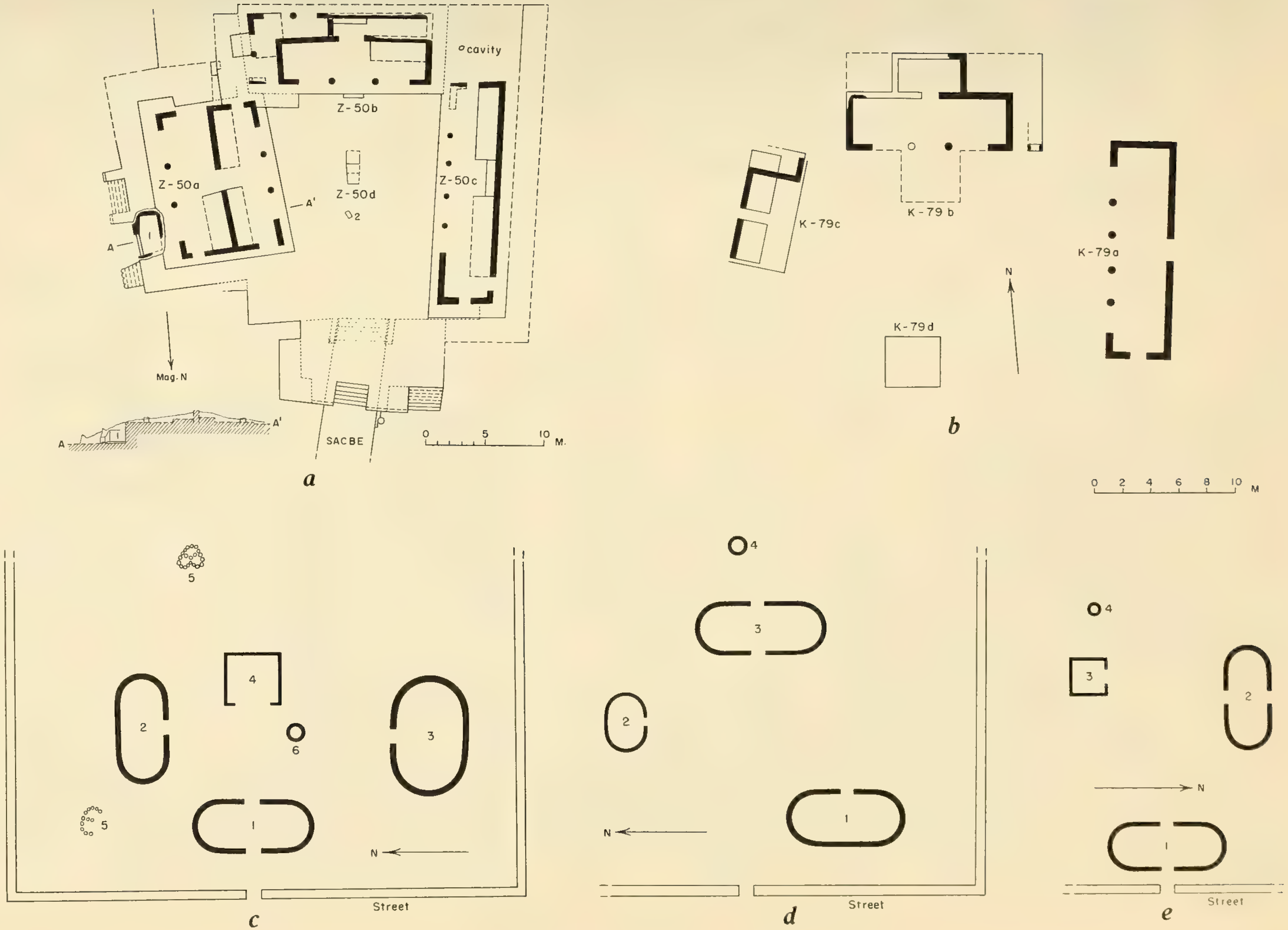

cavity
Z-50b
Z-50a
Z-50d
2
Z-50c
A
A'
Mag. N
SACBE
0 5 10 M.
a
K-79b
K-79c
K-79a
N
K-79d
b
0 2 4 6 8 10 M
5
4
2
6
3
1
5
N
Street
c
4
3
2
N
1
Street
d
4
3
2
N
1
Street
e

FIG. 7

FIGURE 8. Dwelling-type structures at Mayapan, from simplest to more complex forms, plans.

k: Str. AA-156.

1, enclosed area back of house.

l: Str. T-53a.

1, enclosed area back of house.

o: Str. O-33a.

1, stone column 5 drums high, in position.

u: Str. S-133a.

1, stone-lined cist, Burial Vault 10.

v: Str. Y-2d (figs. 18,a and 21,d).

1, Burial 36. 2, Burial Vault 14. 3, Burial Vault 12. 3, Burial Vault 13.

z: Str. Q-62 (fig. 17,g).

1, Burial 15.

dd: Str. Q-119a (figs. 17,f and 19,d).

1, Burial Vault 9 (figs. 16,a; 17,f; 23,i-l). 2, niche (fig. 19,c).

ee: Str. R-100.

1, passageway filled to level of benches. 2, Burial 32.

ff: Str. Q-208 (fig. 19,e and f).

A-B, section showing early construction.

hh: Str. Q-244b (figs. 18,k; 19,g; 21,c).

1, plaster base, possibly for wooden post or statue (fig. 19,i). 2, Burial 26.

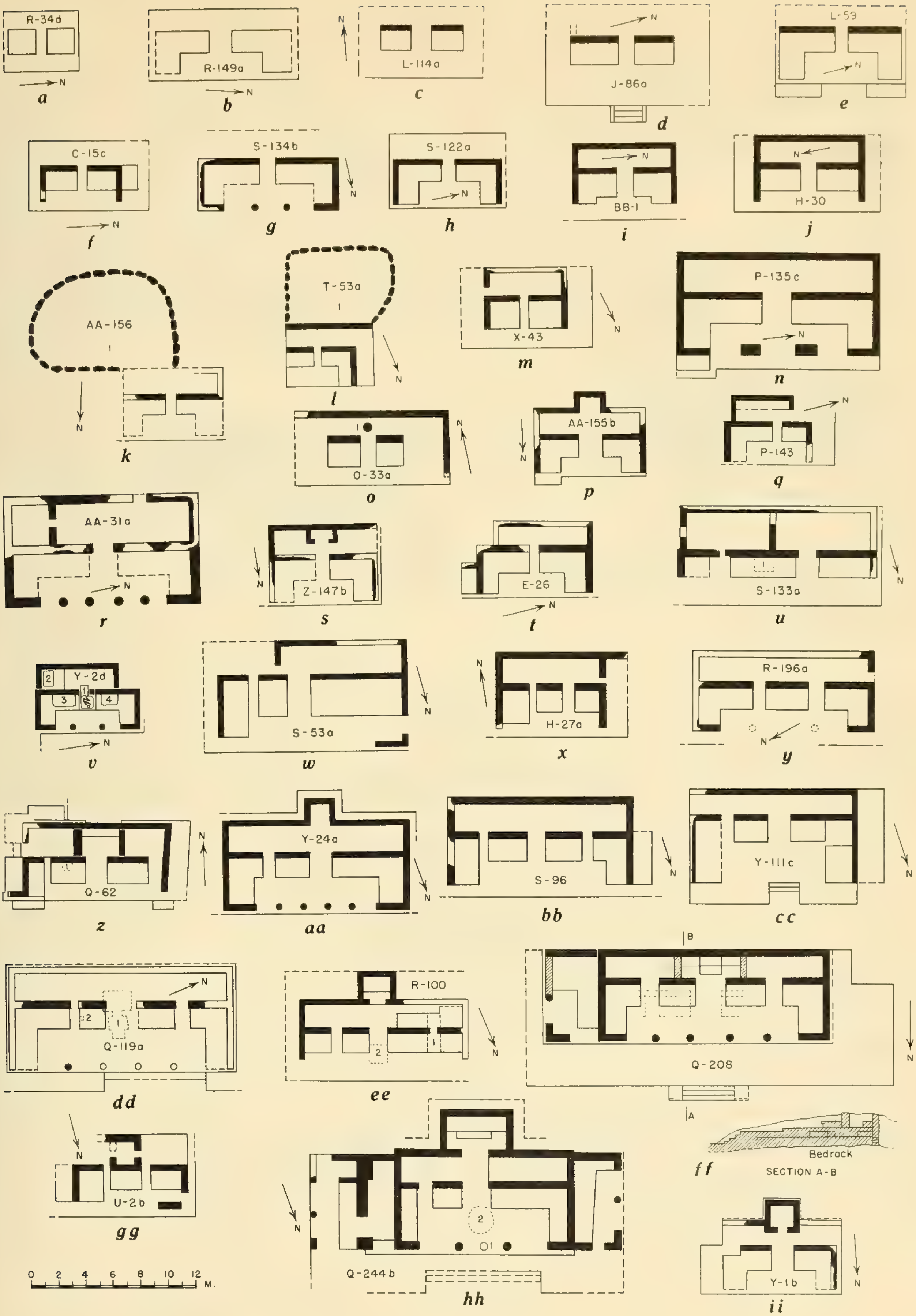

R-34d
a
R-149a
b
L-114a
c
J-86a
d
L-59
e
C-15c
f
S-134b
g
S-122a
h
BB-1
i
H-30
j
AA-156
k
T-53a
l
X-43
m
P-135c
n
O-33a
o
AA-155b
p
P-143
q
AA-31a
r
Z-147b
s
E-26
t
S-133a
u
Y-2d
v
S-53a
w
H-27a
x
R-196a
y
Q-62
z
Y-24a
aa
S-96
bb
Y-111c
cc
Q-119a
dd
R-100
ee
Q-208
B
A
Bedrock
ff
SECTION A-B
U-2b
gg
Q-244b
hh
Y-1b
ii
N
0 2 4 6 8 10 12 M.

FIG. 8

FIGURE 9. Structure Z-152a, section, perspective sketch, plan, and elevation, showing reconstructed roof of perishable materials.

a: Section.

1, ridge pole. 2, purlin. 3, roof rod. 4, A-frame. 5, A-frame bar. 6, rafter. 7, pole plate. 8, wall pole. 9, main post. 10, crossbeam.

b: Perspective sketch.

c: Plan.

1, probable position of wooden main posts. 2, position of stone columns.

d: Elevation.

FIGURE 10. Dwelling-type structures at Uxmal, Kabah, Sayil, Chacchob, and Chichen Itza, plans.

U = Uxmal, K = Kabah, S = Sayil, C = Chacchob, CH = Chichen Itza.

p and q are from Wauchope, 1938, fig. 51, 3 and 4.

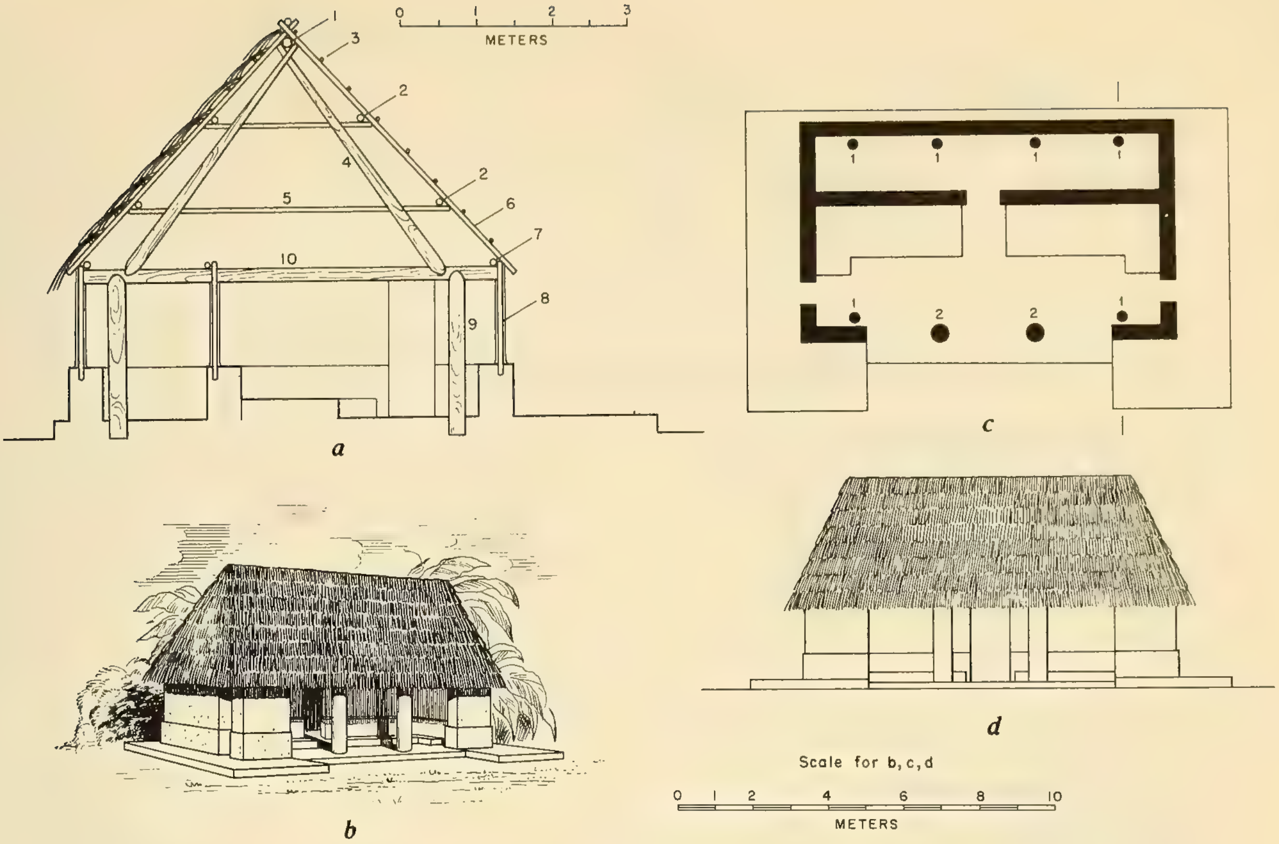

METERS
a
c
b
d
Scale for b, c, d
METERS

FIG. 9

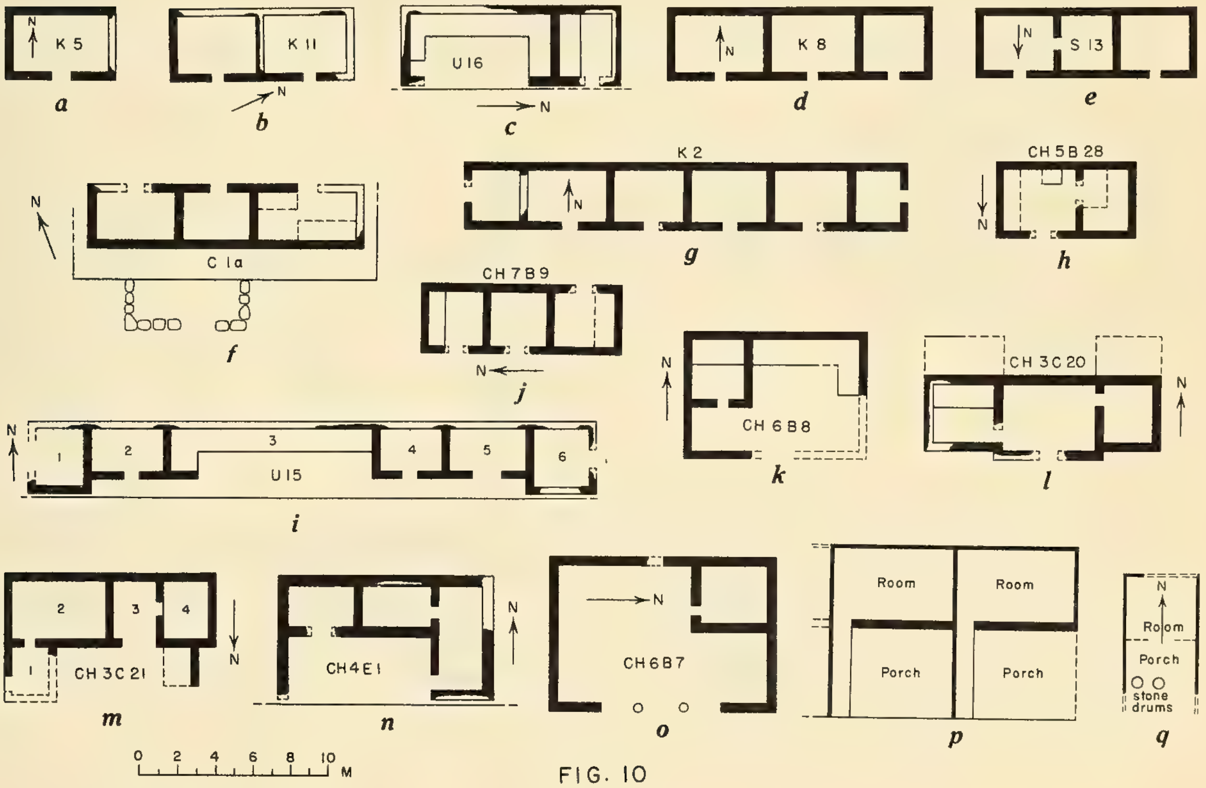

N
K 5
a
K 11
N
b
U16
N
c
N
K 8
d
N
S 13
e
N
C 1a
f
K 2
N
g
CH 5B 28
N
h
CH 7B 9
N
j
N
CH 6B8
k
CH 3C 20
N
l
N
1
2
3
U15
4
5
6
i
2
3
4
1
CH 3C 21
N
m
CH4E1
N
n
N
CH6B7
o
Room
Room
Porch
Porch
p
N
Room
Porch
stone drums
q
0
2
4
6
8
10
M

FIG. 10

FIGURE 11. Oratories associated with family groups, plans and sections.

b: Str. P-14a.

1, Burial 11. 2, Cache 6.

c: Str. P-23c.

1, postholes. 2, niche. 3, Burial 12.

d: Str. R-142c.

1, niche roofed with flat stone. 2, Burial 33.

f: Str. R-126a (fig. 18,b and j).

1, niche in face of bench.

g Str. R-91 (fig. 18,c and g).

1, Cache 23. Two upper floors and early floor had been cut through, possibly to get some offering out of small cist which contained fragment of incensario ware. 2, column with projecting knob in shape of jaguar head (fig. 19,l).

h: Str. Y-8b (fig. 18,h).

1, Burial 37.

j: Str. P-28b (fig. 18,i).

1, shaft inside altar, Burial Vault 8. 2, Burial 13.

k: Str. Q-37a (fig. 18,d).

1, Burial 14.

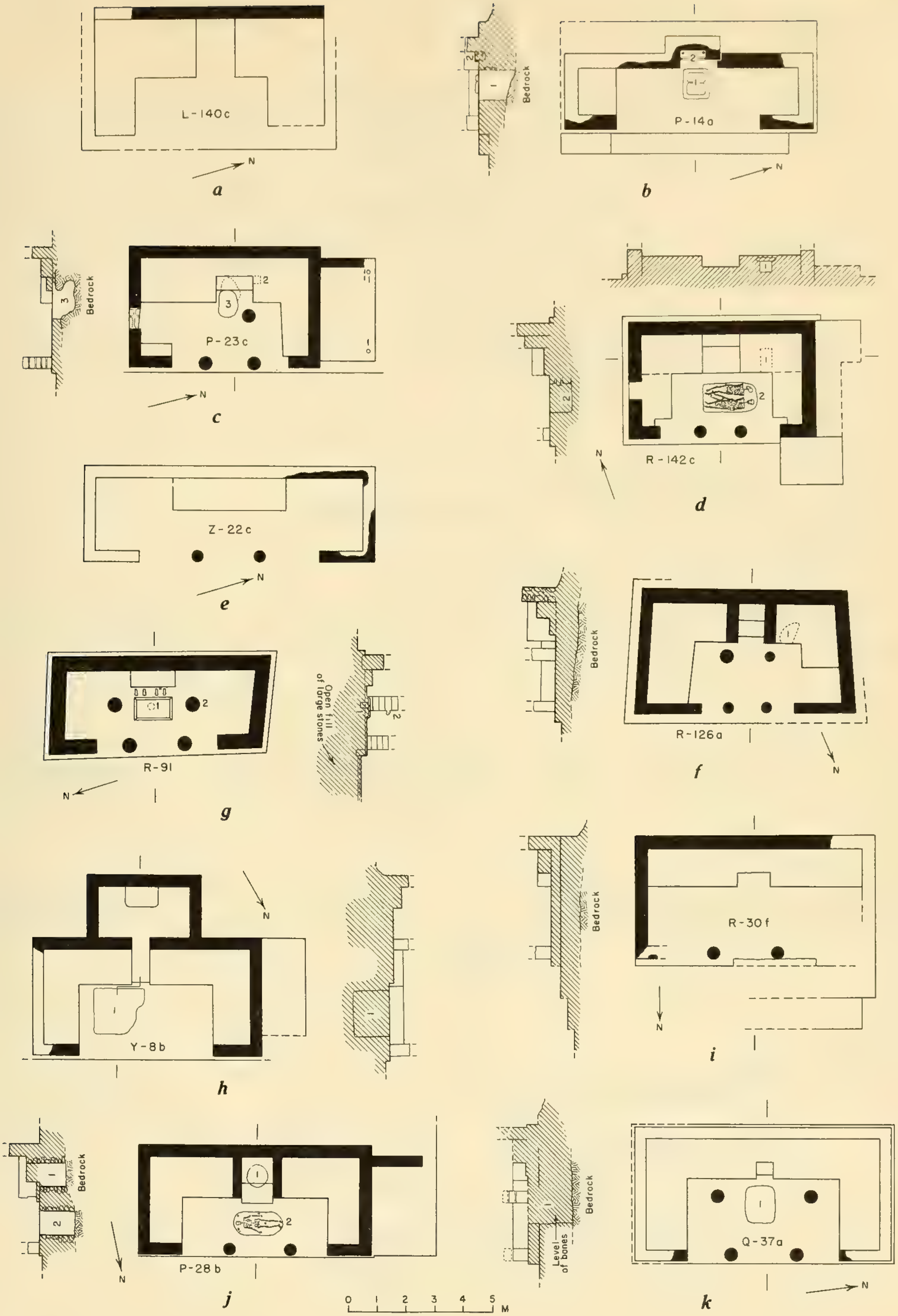

L-140c
N
a
2
1
Bedrock
2
P-14a
N
b
3
Bedrock
2
3
P-23c
N
c
1
2
R-142c
N
d
Z-22c
N
e
Bedrock
1
R-126a
N
f
1
2
R-91
N
Open fill of large stones
2
g
N
1
Y-8b
h
Bedrock
R-30f
N
i
1
2
Bedrock
N
1
2
P-28b
j
Bedrock
1
Level of bones
1
Q-37a
N
k
0 1 2 3 4 5 M

FIG. 11

FIGURE 12. Group altars and group shrines, plans.

a-g: Group altars.

h-t: Group shrines.

u: Shrine possibly associated with Group A-2.

1, Cache 1.

FIGURE 13. Platforms supporting walls on one or two sides or a single wall in the center, plans.

a-m: Platforms supporting a single wall.

n-dd: Platform supporting walls on two sides.

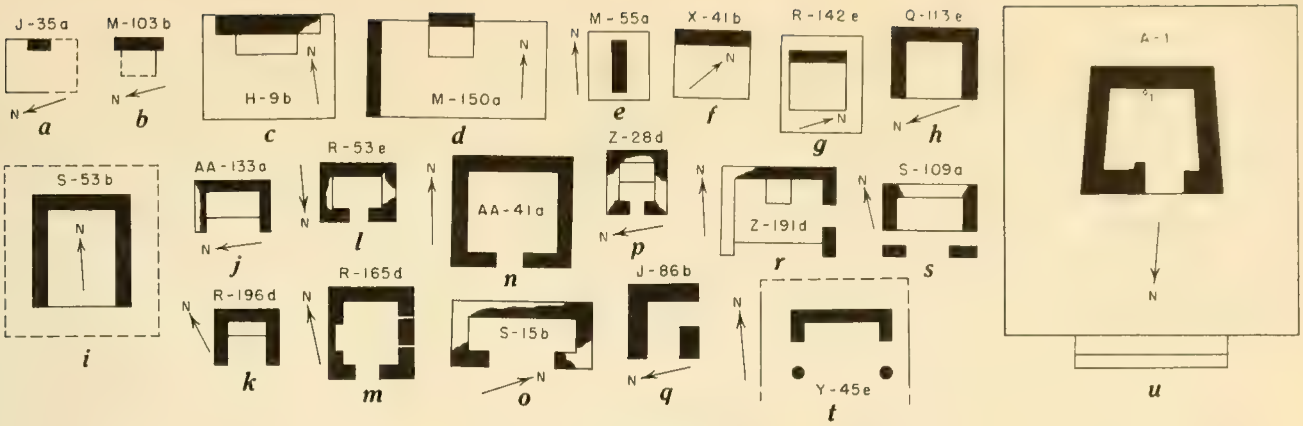

J-35a
a
M-103b
b
H-9b
c
M-150a
d
M-55a
e
X-41b
f
R-142e
g
Q-113e
h
A-1
u
S-53b
i
AA-133a
j
R-53e
l
AA-41a
n
Z-28d
p
Z-191d
r
S-109a
s
R-196d
k
R-165d
m
S-15b
o
J-86b
q
Y-45e
t
N

FIG. 12

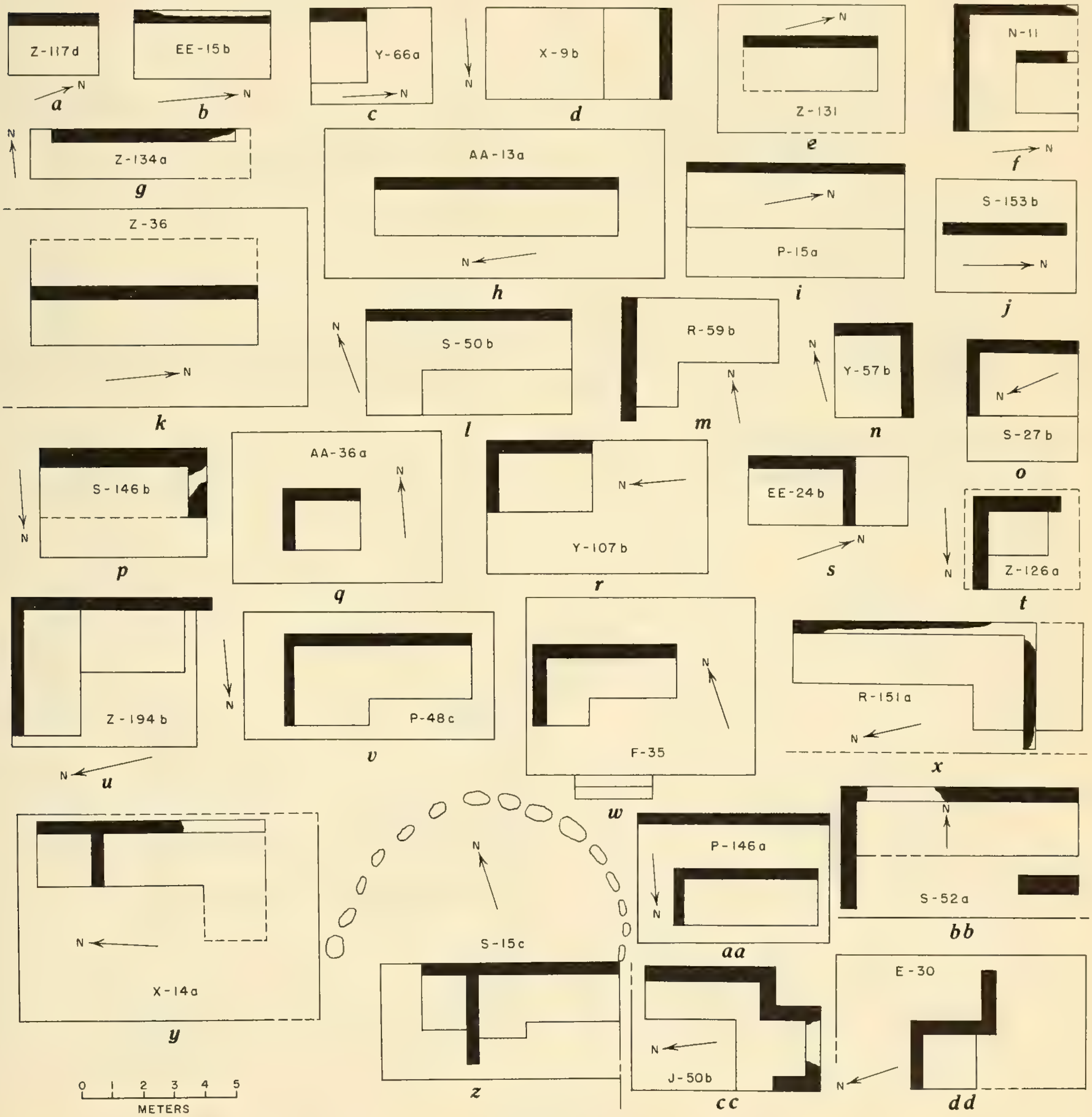

Z-117d
a
EE-15b
b
Y-66a
c
X-9b
d
Z-131
e
N-11
f
Z-134a
g
AA-13a
h
P-15a
i
S-153b
j
Z-36
k
S-50b
l
R-59b
m
Y-57b
n
S-27b
o
S-146b
p
AA-36a
q
Y-107b
r
EE-24b
s
Z-126a
t
Z-194b
u
P-48c
v
F-35
w
R-151a
x
X-14a
y
S-15c
z
P-146a
aa
S-52a
bb
J-50b
cc
E-30
dd
N
0 1 2 3 4 5
METERS

FIG. 13

FIGURE 14. Miscellaneous structures at Mayapan, plans.

The function of these constructions is problematical.

hh: Str. S-133b, plan and sections (fig. 19,j).

1, pottery neck in floor. 2, stone cordholders set in floor. 3, position where two stone cordholders were found (fig. 20,c). 4, Burial 35 (fig. 23,c). 5, Burial Vault 11 (fig. 23,d and e). 6, pottery vessel set in plaster block (fig. 20,a).

ii: Str. F-38, plan and section.

1, chultun or natural depression.

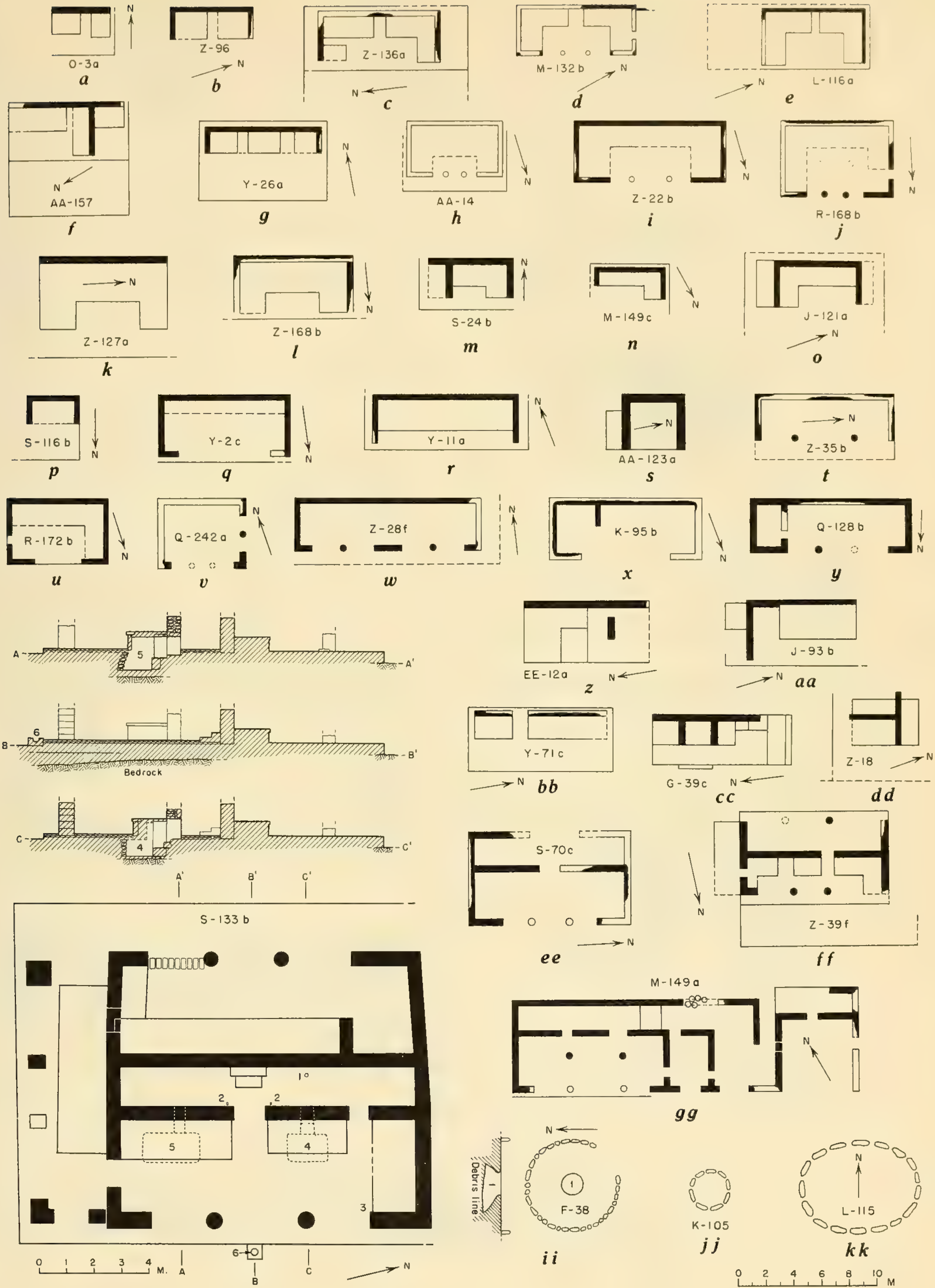

O-3a
a
N
Z-96
b
N
Z-136a
N
c
M-132b
N
d
L-116a
N
e
AA-157
N
f
Y-26a
N
g
AA-14
N
h
Z-22b
N
i
R-168b
N
j
Z-127a
N
k
Z-168b
N
l
S-24b
N
m
M-149c
N
n
J-121a
N
o
S-116b
N
p
Y-2c
N
q
Y-11a
N
r
AA-123a
N
s
Z-35b
N
t
R-172b
N
u
Q-242a
N
v
Z-28f
N
w
K-95b
N
x
Q-128b
N
y
A
A'
5
B
6
B'
Bedrock
C
4
C'
A'
B'
C'
EE-12a
N
z
J-93b
N
aa
Y-71c
N
bb
G-39c
N
cc
Z-18
N
dd
S-70c
N
ee
Z-39f
N
ff
M-149a
N
gg
S-133b
1°
2
2
5
4
3
6
0 1 2 3 4 M.
A
B
C
N
hh
N
Debris line
1
1
F-38
ii
K-105
jj
N
L-115
kk
0 2 4 6 8 10 M

FIG. 14

FIGURE 15. Burials and burial vaults, plans and sections.

a: Str. A-3c, Burial Vault 1, under south bench (fig. 2,3).

1, floor. 2, floor.

b: Str. AA-112a, Burial 40, in terrace in front of structure.

c: Str. J-49a, Burial Vault 4, in platform (fig. 23,a).

1, debris line.

d: Str. J-49b, Burial Vault 5, under east bench (fig. 23,b).

1, passageway between benches. 2, plastered stone step to which floor turns up. 3, plastered floor.

e: Str. J-131a, burials under north and south benches.

1, Burial 4, under north bench. 2, Burial 3, under south bench (fig. 22,j).

f: Str. J-122c, Burial Vault 6, in platform (fig. 23,f).

1, entrance to vault.

g: Str. K-52a, section showing position of burials (fig. 5,b).

1, Burial 5, under floor between benches in front room. 2, Burial 6, under floor between benches in central room. 3, Burial 7, under floor of shrine room. 4, plaster floor. 5, plaster floor.

h: Str. K-52c, Burial 9, under north room (fig. 5,b).

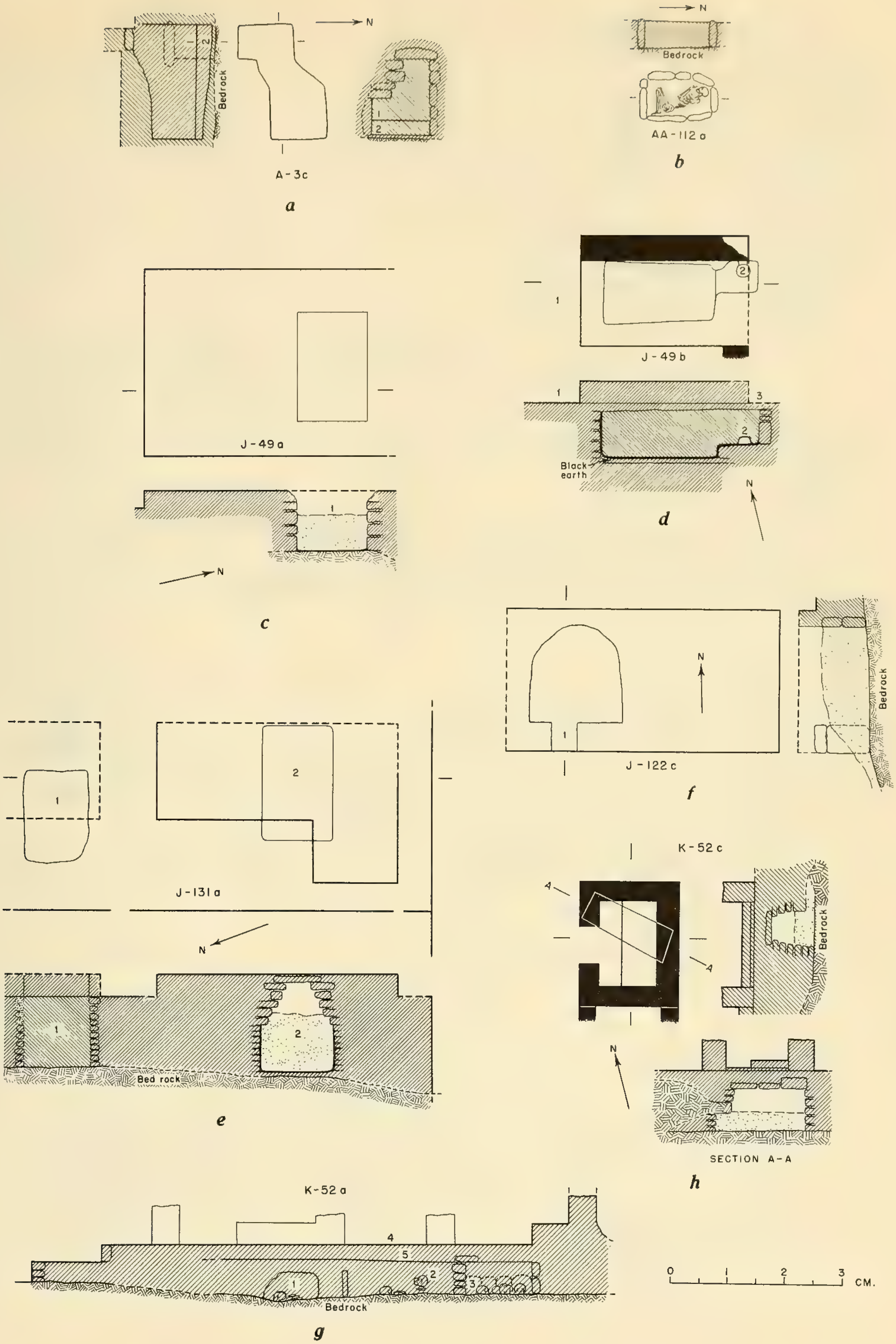

N
2
Bedrock
1
2
A-3c
a
N
Bedrock
AA-112 a
b
J-49 a
1
N
c
2
1
J-49 b
1
3
2
Black earth
N
d
N
1
J-122 c
Bedrock
f
1
2
J-131 a
N
1
2
Bed rock
e
K-52 c
A
A
Bedrock
N
SECTION A-A
h
K-52 a
4
5
1
2
3
Bedrock
g
0
1
2
3
CM.

FIG. 15

FIGURE 16. Burials and burial vaults, plans and sections.

a: Str. Q-119a, Burial Vault 9, under central passageway and back room (figs. 8,*dd*,1; 17,*f*; 23, *i-l*).

1, niche.

b: Str. Z-4b, Burial Vault 15, under west bench (fig. 5,*d*).

1, level of west bench. 2, rough floor of packed earth and stone to level of bedrock. 3, line of west wall of vault.

c: Str. AA-13c, Burial Vault 16, under central bench.

1, plaster floor.

d: Str. AA-37, Burial 38, under central passageway.

e: Str. AA-60a, Burial Vault 17, under west bench.

1, floor.

f: Str. AA-103a, Burial 39, under platform at south end of structure.

1, outside bench at south end. 2, level of platform. 3, east edge of platform. 4, rough floor to level of bedrock.

g: Str. AA-94, Burial Vault 18, under south bench.

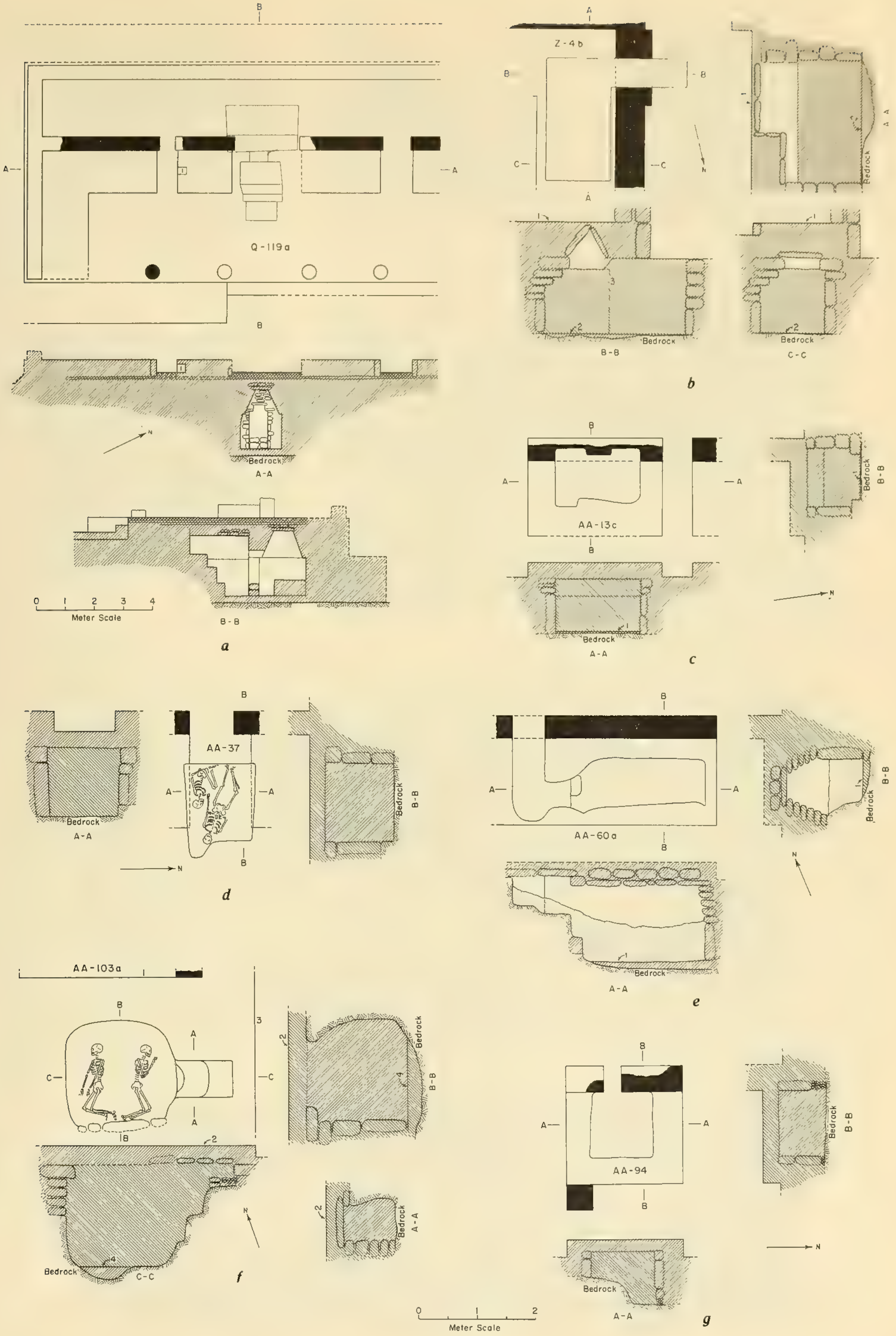

B
A
A
Q-119a
B
N
Bedrock
A-A
0 1 2 3 4
Meter Scale
B-B
a
A
Z-4b
B
B
C
C
A
N
1
A-A
Bedrock
1
3
2
Bedrock
B-B
1
2
Bedrock
C-C
b
B
A
A
AA-13c
B
1
B-B
Bedrock
N
1
Bedrock
A-A
c
B
AA-37
A
A
B
Bedrock
A-A
N
Bedrock
B-B
d
B
A
A
AA-60a
B
1
Bedrock
B-B
N
1
Bedrock
A-A
e
AA-103a
B
A
C
C
A
18
3
2
2
4
Bedrock
B-B
2
N
4
Bedrock
C-C
f
2
Bedrock
A-A
B
A
A
AA-94
B
Bedrock
B-B
N
Bedrock
A-A
g
0 1 2
Meter Scale

FIG. 16

FIGURE 17. Modern Indian houses and Strs. Q-119a and Q-62.

a-*b*: Modern houses at Acanceh, Yucatan.

c-*d*: Modern houses at Rancho San Joaquin, Mayapan.

e: Modern house at Telchaquillo, Yucatan.

f: Looking west at Str. Q-119a (figs. 8*dd* and 23,*i*).

g: Looking north at Str. Q-62 after solidification (fig. 8,*z*).

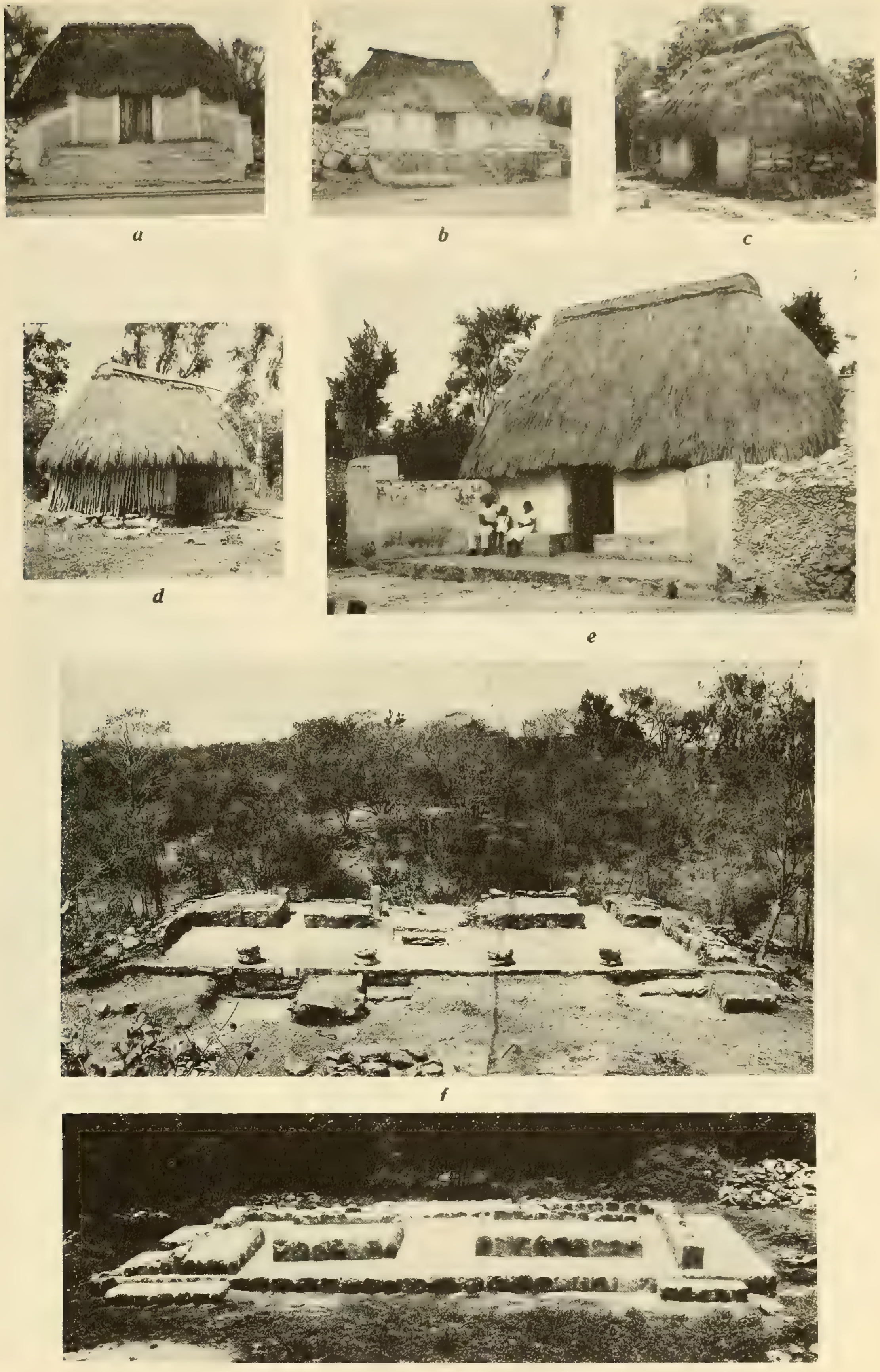

a b c
d e
f
g

FIG. 17

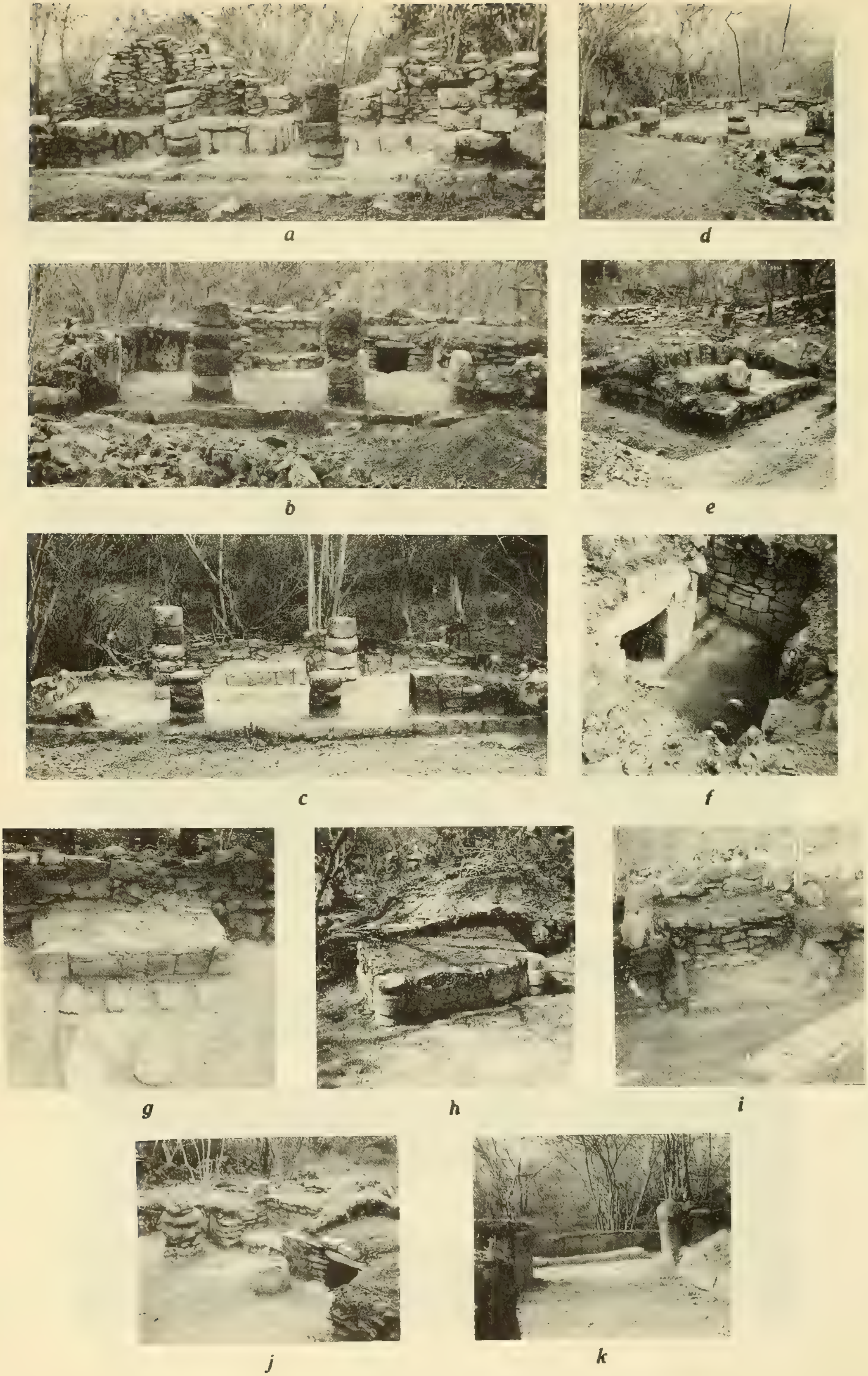

a
d
b
e
c
f
g
h
i
j
k

FIG. 18

FIGURE 18. Structures Y-2d, R-126a, R-91, Q-37a, and shrines and altars associated with various groups and buildings.

a: Str. Y-2d from the northeast (fig. 8,*v*).
b: Looking south at Str. R-126a (fig. 11,*f*).
c: Looking east at Str. R-91 (fig. 11,*g*).
d: Looking southwest at Str. Q-37a (fig. 11,*k*).
e: Str. Q-170 from northwest (fig. 4,*a* and *b*).
f: Str. R-89, entrance and rings set in floor in front areaway (fig. 6,*a* and *b*).
g: Looking east at altar in Str. R-91 (fig. 11,*g*).
h: Looking south at altar in Str. Y-8b (fig. 11,*h*). Notice re-used Puuc "spools" at corners.
i: Looking south at altar in Str. P-28b (fig. 11,*j*).
j: Looking southeast at niche and altar in Str. R-126a (fig. 11,*f*).
k: Looking south into shrine room in Str. Q-244b (fig. 8,*hh*).

FIGURE 19. Altars, benches, and columns from various structures.

a: Str. Q-169, rear room from east, showing altar (fig. 4,a).

b: Str. R-87, shrine room (fig. 6,a).

c: Str. Q-119a, niche in south side of south central bench (fig. 8,dd,2).

d: Str. Q-199a, north face of north central bench after pit was dug into bench, showing back wall extending below top of bench (fig. 8,dd).

e: Bench in front room of Str. Q-208, showing pairs of re-used Puuc "spools" (fig. 8,ff).

f: Front room of Str. Q-208 from west end with columns on left (fig. 8,ff).

g: Southwest corner of central front room, Str. Q-244b (fig. 8,hh).

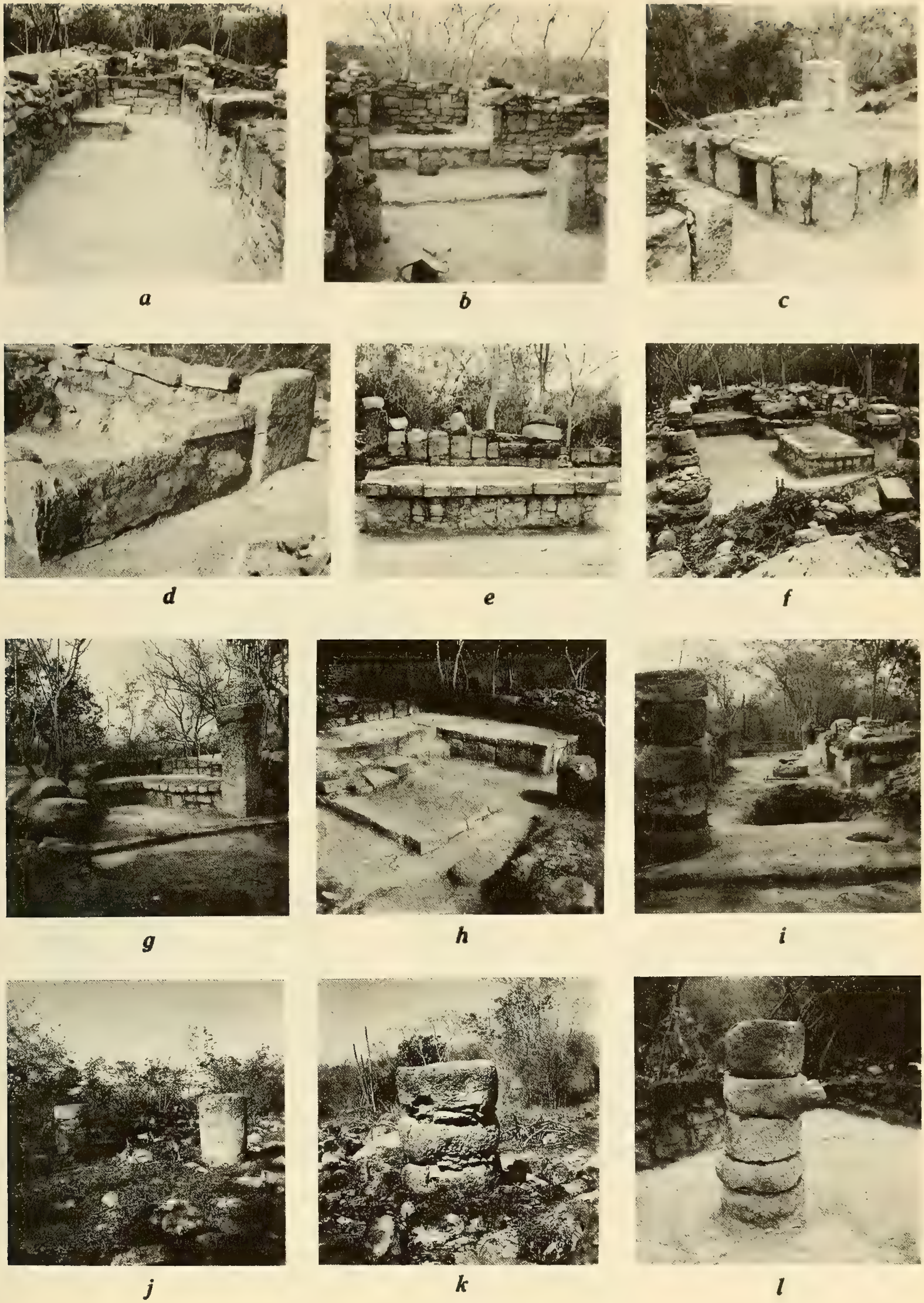
h: Looking northwest at north room of Str. Q-172 (fig. 4,a).

i: Looking south through center of Str. Q-244b. Notice plaster base, possibly for wooden or stone sculpture (fig. 8,hh,1).

j: Looking southwest at columns on east side of Str. S-133b (fig. 14,hh).

k: Str. K-79a, one of columns on west side of building (fig. 7,b).

l: Southern inner column in Str. R-91 (fig. 11,g,2). Notice projecting knob in shape of jaguar head.



a b c

d e f

g h i

j k l

FIG. 19

FIGURE 20. Small altar in front of Str. S-133b, cordholders, and stairways with dwelling groups.

a: Pottery vessel set in plaster block projecting from the center of the platform on the east side of Str. S-133b (fig. 14,*hh*,6).

b: Limestone cordholder from Str. Q-208.

c: Cordholders found near north jamb of east side of Str. S-133b (fig. 14,*hh*,3).

d: Possible cordholders found in central room next to south doorway, Str. S-133b (fig. 14,*hh*).

e: Str. R-86, north half of early stairway. Note capped balustrade.

f: Northeast stairway to Group R-85 to R-90 (fig. 6,*a*).

g: Main stairway to Str. R-87 (fig. 6,*a*).

h: Looking north at stairway on south side of large platform supporting Group K-52 (fig. 5,*b*).

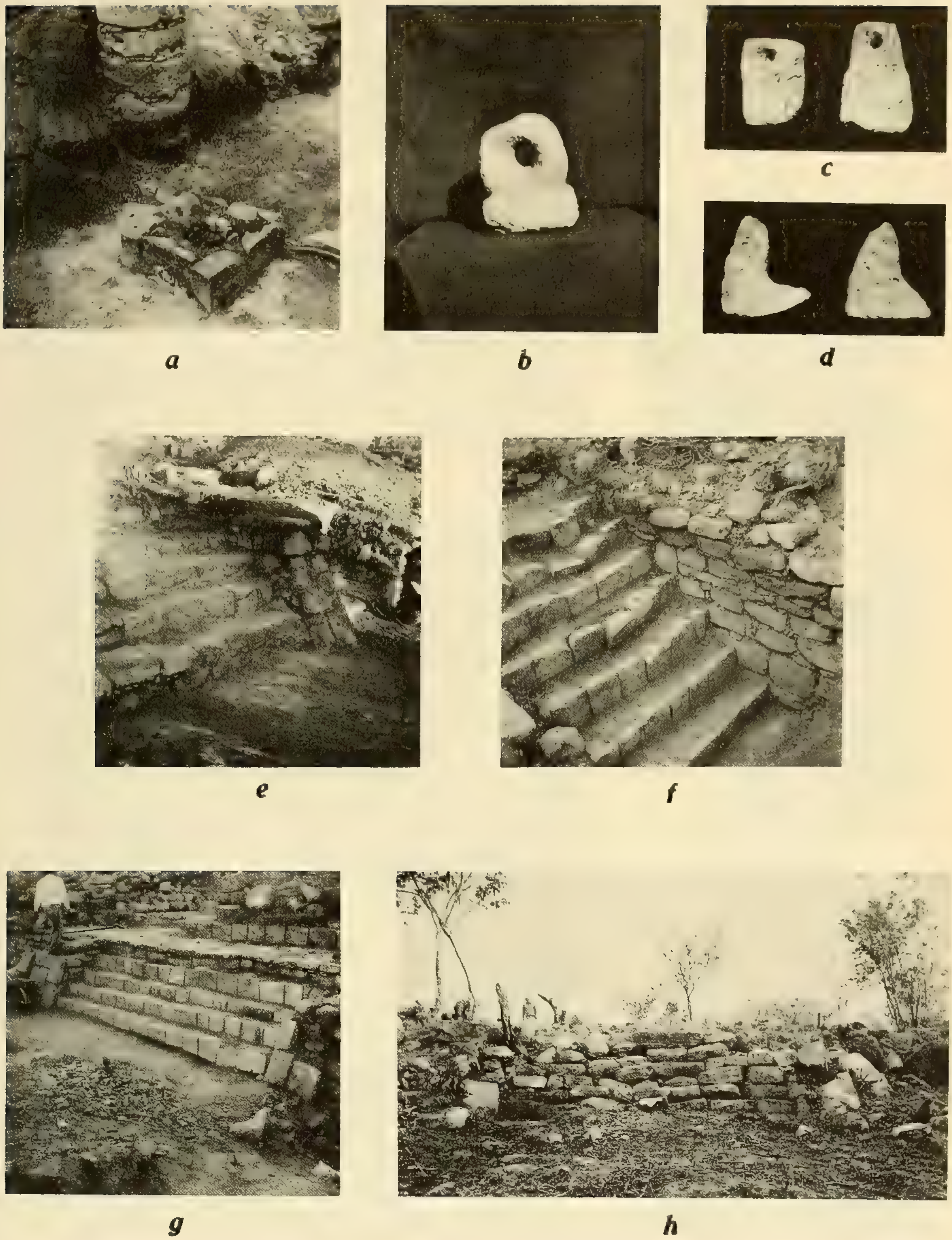


FIG. 20

FIGURE 21. Masonry in dwelling groups.

a: Looking northwest at Str. E-36a.

b: Looking northwest at Str. M-89c. Large stone on right rises 70 cm above top of bench.

c: Northeast corner of shrine room, Str. Q-244b (fig. 8,hh).

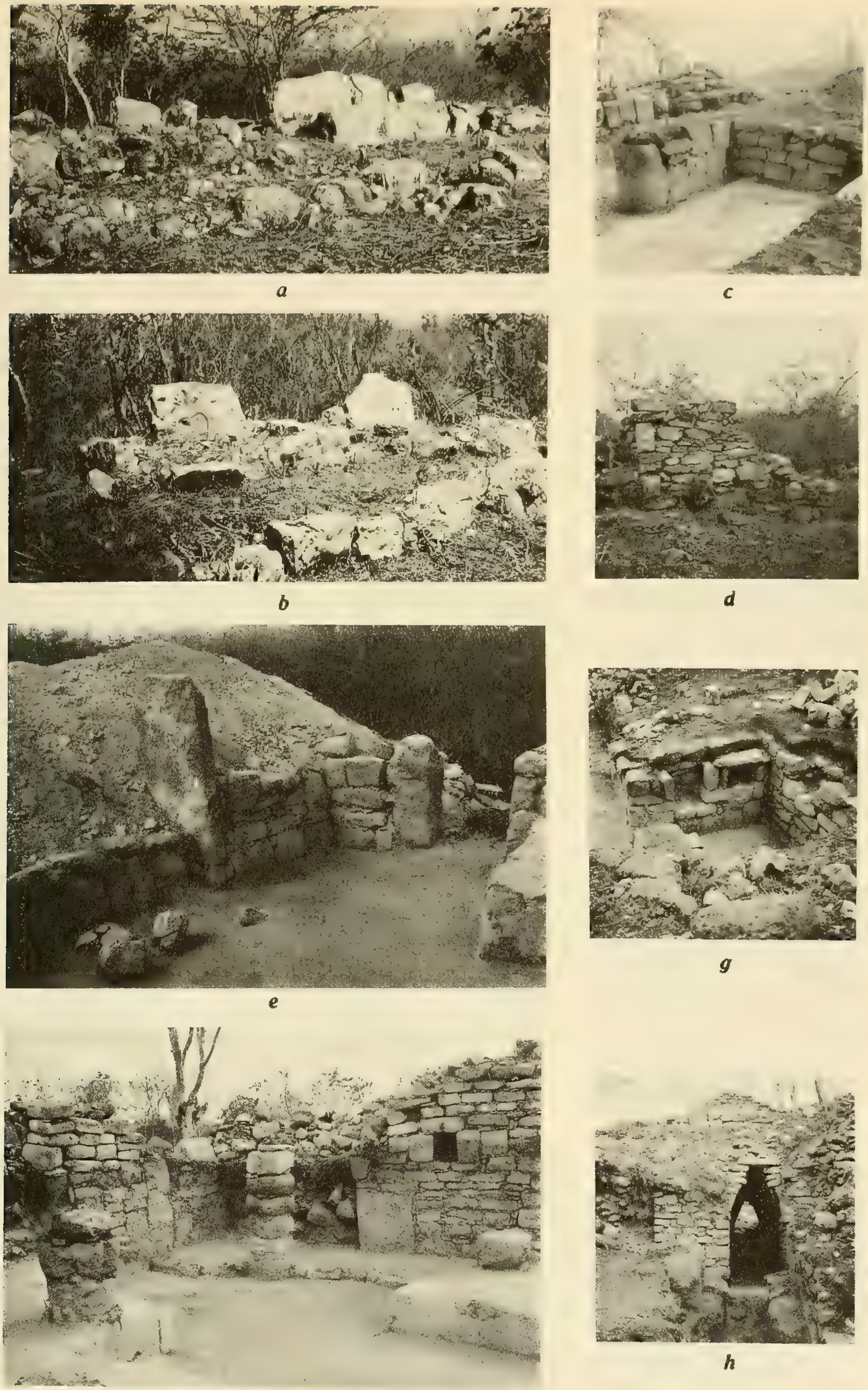
d: Outside wall at south end of front room of Str. Y-2d (fig. 8,v).

e: Str. R-86a, inner southwest corner (fig. 6,a).

f: Str. R-86a, inner northeast corner (fig. 6,a).

g: Str. R-86b. Notice two niches in south wall (fig. 6,a,16).

h: South entrance to passageway to Group R-85 to R-90 (fig. 6,c).


a c

b d

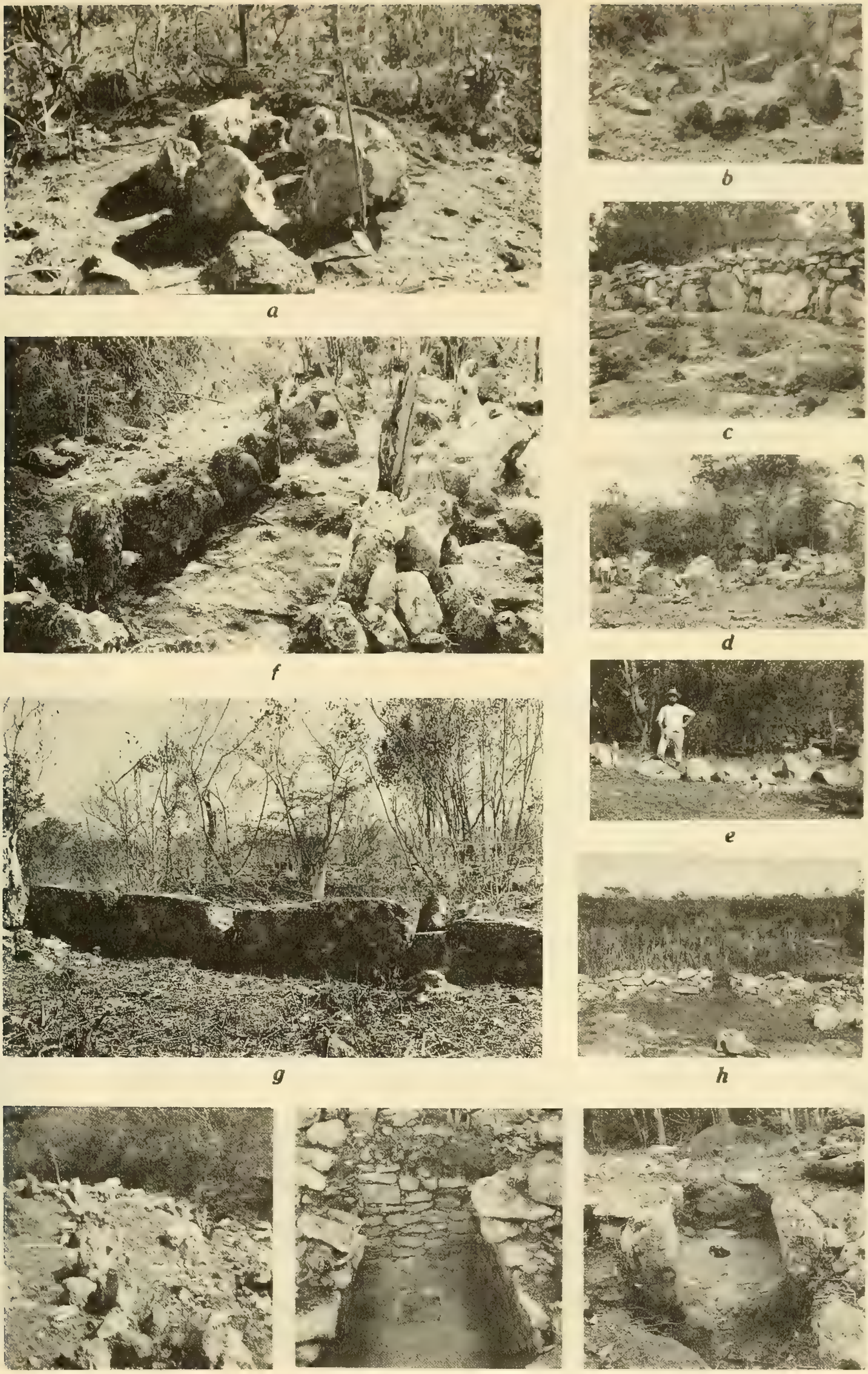
e g

f h

FIG. 21

FIGURE 22. Stone circles, modern property wall, ancient property walls, terrace wall, and burial vaults.

a: Circular stone enclosure next to Group K-44, diameter 2.80 m.
b: Circular stone enclosure south of Group Z-170, diameter 2.10 m.
c: Modern property wall, Telchaquillo.
d: Ancient wall built of large slabs (1130 S, 315 W).
e: Typical ancient wall (975 S, 535 W).
f: Lane formed by ancient property walls between Groups H-34 and H-35 (fig. 1).
g: South face of terrace supporting Group J-131. Large middle stone is 1.70 m long.
h: Looking north at entrance into Group A-3 (fig. 2,1).
i: Looking down on property wall of Group A-3.
j: Vault of Burial 3 in south bench of Str. J-131a (fig. 15,*e*,2).
k: Burial Vault 2, under central bench in Str. I-94.



a b c d f e g h i j k

FIG. 22

FIGURE 23. Burials, burial vaults, and entrances to vaults.

a: Burial Vault 4, in south end of Str. J-49a (fig. 15,*c*).

b: Burial Vault 5, in east bench of Str. J-49b (fig. 15,*d*).

c: Entrance to vault of Burial 35 under central bench in east room of Str. S-133b (fig. 14,*hh*,4).

d: Entrance to Burial Vault 11, under south bench in east room of Str. S-133b (fig. 14,*hh*,5).

e: Looking southwest into Burial Vault 11, under bench at south end of east room of Str. S-133b (fig. 14,*hh*,5).

f: Burial Vault 6, under Str. J-122c (fig. 15,*f*).

g: Burial 22, in Str. Q-169, with pottery vessels in southeast corner (fig. 4,*a*,1).

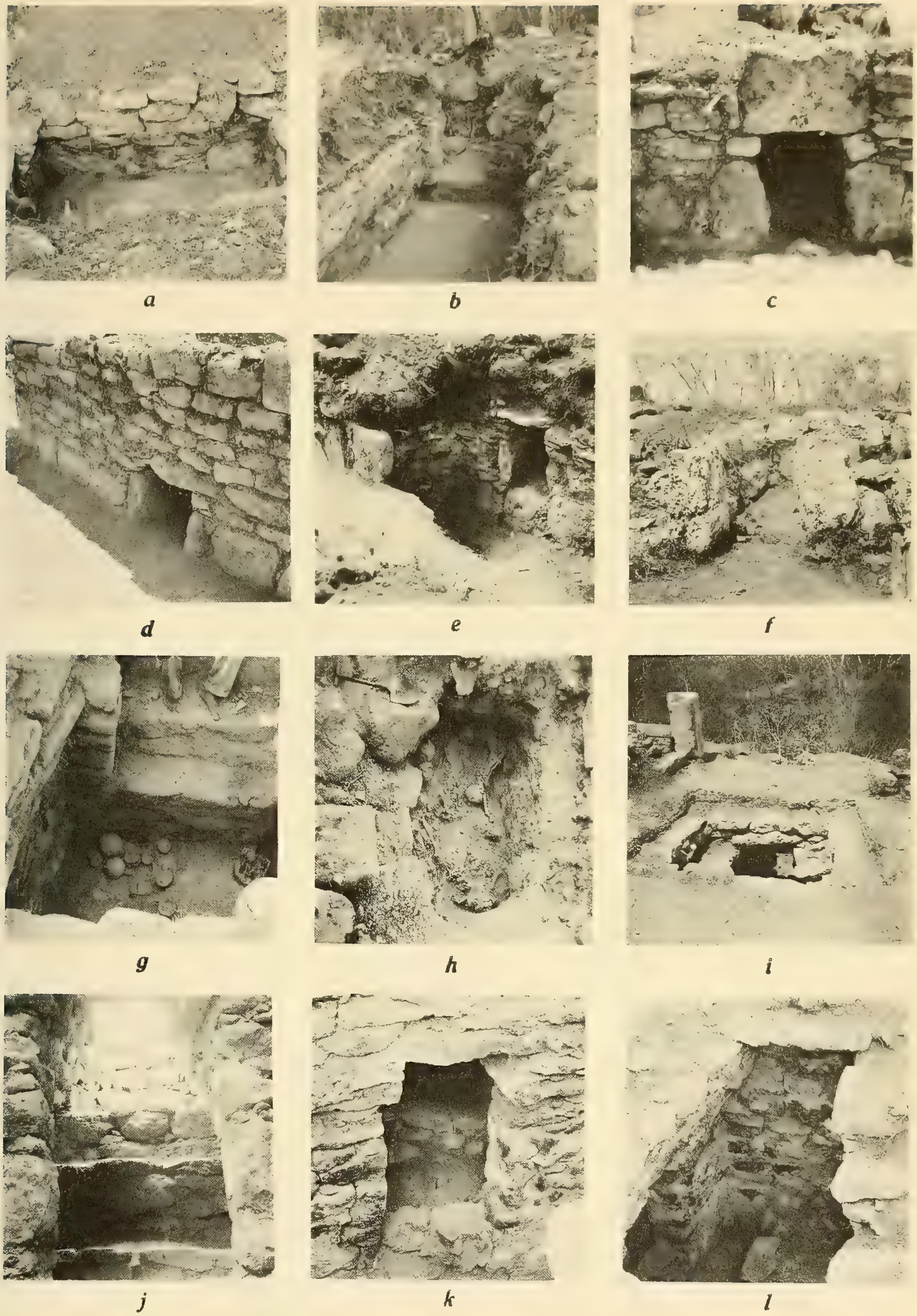
h: Ossuary, Burial 17, in front of dais, under floor level of main room of Str. Q-165.

i: Opening to Burial Vault 9, in Str. Q-119a (figs. 8,*dd*,1; 16,*a*; 17,*f*).

j: Looking up stairway in Burial Vault 9, in Str. Q-119a (fig. 16,*a*).

k: Looking east at doorway between two chambers of Burial Vault 9, in Str. Q-119a (fig. 16,*a*).

l: South end of inner chamber of Burial Vault 9, in Str. Q-119a (fig. 16,*a*).


a *b* *c*

d *e* *f*

g *h* *i*

j *k* *l*

FIG. 23

PART 4

THE ARTIFACTS OF MAYAPAN

Tatiana Proskouriakoff

With sections by William C. Root and Joy Mahler

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All photographs of objects from Mayapan, with the exception of those of metal, were made by Sr. Raul Acuña, of Merida, Yucatan. Metal objects were photographed by David de Harport.

INTRODUCTION

From 1951 to 1955 the Department of Archaeology of Carnegie Institution of Washington conducted excavations at the site of Mayapan, Yucatan, under the direction of H. E. D. Pollock. The work is described in detail in a series of papers called Current Reports published by the Department, and here designated by the abbreviation CR. Brief notices of work in progress have also appeared in the Year Books of the Institution (YB). A monograph now being prepared by R. E. Smith will cover pottery vessels, sherds, musical instruments, and clay figurines from surveys and excavations at Mayapan. All other small objects that occur in the collections, with the exception of unworked bone material, are considered in the present report under the general heading of "artifacts."

These objects were segregated in the field from sherd collections and were catalogued, each being marked with a number designating the year of recording and the number of the specimen. Each specimen also retains a lot number, indicating the location where it was found. Lot numbers starting with the letters A-, B-, C-, D- refer to collections made within the city wall of Mayapan. The simple letter A stands for objects gathered from the surface in general surveys. A- followed by a number indicates locations in or near house mounds; B- lots are from excavations near the city wall; C-, from ceremonial precincts; and D-, from trenches and pits in cenotes, sinkholes, and other places not directly associated with constructions. In a later section of this report we deal also with E- lots, which come from small sites in the vicinity of Mayapan, and lots G-, from Chichen Itza and Balam Canchê. The precise provenience of an artifact is not usually mentioned here unless it has some obvious significance, but it can be traced through the lot number by consulting the list in the Appendix, which either gives the lot location or refers to the Current Report in which the lot is described.

The collection, formerly housed in the Institution's office in Merida, was placed in the hands of the Merida office of the Instituto Nacional de Antropología e Historia de Mexico in 1958, together with a copy of the catalog and a file of lot descriptions giving the ceramic as well as the artifact content of the lots. A copy of both files has been placed in the custody of the Peabody Museum of Harvard University. Thus, additional data on the provenience and associations of the pieces mentioned here can be had by consulting the records held by these institutions.

The aim of the present report is primarily descriptive: to publish and make available the data recovered, rather than to draw from them historical inferences concerning Mayapan. The study was almost entirely confined to simple examination and classification of the artifacts. Only selected specimens were brought to the United States for expert identification of materials and for technical analysis. These included, however, virtually all the objects of metal, which were studied by Dr. William C. Root. I am very grateful to him for his report, which is included in the section on metals. Dr. W. J. Clench, of the Museum of Comparative Zoology, Harvard University, has given freely of his time to help with the identification of shells, working both from actual specimens and from photographs. Clayton Ray, graduate student of the Department of Zoology, Harvard University, examined some of the bone material, and Robert Berman, of the Department of Mineralogy and Petrography, identified some of the minerals. Miss Joy Mahler studied the very fragmentary textiles and textile impressions that we were able to recover.

I am indebted to many others for advice on various topics, but especially to Dr. A. V. Kidder, whom I often consulted, and who placed at my disposal his notes on the distribution of various artifacts in Middle America. These notes have been very useful, but they make it quite clear that the known distributions of artifact types are still so incomplete that they shed little light on cultural contacts or historical sequences and many may actually be misleading. For this reason, specimens from other sites are mentioned in this report only when their occurrence has a clear bearing on some specific problem, or when the data come from a large representative collection.

Collections of the size of ours from Mayapan are very rare, and only a few have been described and published. A. V. Kidder's monograph on the artifacts of Uaxactun (Kidder, 1947) is a pioneer work describing material which represents mainly the Classic Period in the Peten region of Guatemala. In this work Kidder gives copious references to records of artifacts reported elsewhere and in effect makes an excellent summary of our present knowledge relevant to the period and the region. Subsequent excavations have altered this picture very little. Kidder's work on Kaminaljuyu (Kidder, Jennings, and Shook, 1946), Wauchope's (1948) on Zacualpa, and Woodbury and Trik's (1953) on Zaculeu together cover the same and later periods in the Guatemala highlands. W. R. Coe (1959) has made a similar study on the artifacts of Piedras Negras, Guatemala. No such representative studies are available for sites in Mexico, though a number of reports contain excellent descriptions of small collections. For Yucatan, however, even such reports are lacking. Here the pre-Classic periods are represented only by ceramic material, and the Early Classic by some architectural remains of uncertain date and the results of minor excavations that have produced few, if any, artifacts. Even for the high development of culture in the Puuc region, fairly well known in its architectural aspects, we have no sizable body of data on artifacts. Individual specimens from the Puuc area abound in private collections, but are not accompanied by reliable information about their provenience or their associations. Our own collections from the Puuc region, and the collection of E. Wyllys Andrews from Dzibilchaltun, have provided some comparative material, but the number of artifacts recovered is not large enough to characterize the material culture of Yucatan in Classic times.

Only the site of Chichen Itza has yielded a body of data adequate for comparative study. The various collections from this site, however, have not been collated, and only a few artifacts have been described and published. A short summary of recognizable types that occur in the catalog of objects excavated by Carnegie Institution is given in a separate section of this report. Some reference is made also to the material from the Sacred Cenote, now in the Peabody Museum of Harvard University.

The major part of the Chichen Itza collection can be referred to a period which preceded the foundation of Mayapan and which is characterized by a strong admixture of architectural and artistic traits found also at Tula, Hidalgo. Recent archaeological work, confirming Brainerd's earlier conclusions (YB 41, p. 255), shows that all the pottery so far removed from beneath constructions is earlier than that associated with the period of construction at Mayapan. We are not yet sure, however, whether there was any considerable lapse of time between the occupation of the two cities. Material contemporary to that from Mayapan occurs at Chichen Itza only in surface deposits, in secondary occupational debris within buildings, and in the burial shaft of the High Priest's Grave (E. H. Thompson, 1938). Brainerd has postulated an intervening "Middle Mexican" period characterized by "Coarse Slate" or "Black-on-cream" ware, which occurs in the earliest strata at Mayapan only as a minor ware associated with Mayapan redwares.

As nearly as we can estimate from present archaeological and historical evidence, the bulk of the material from Mayapan dates from between A.D. 1263 and 1446. However, two carbon 14 readings of samples of charcoal chosen to represent the earliest and the latest remains (p. 8) gave the results A.D. 1015 ± 95 and A.D. 1360 ± 90, and a second late sample has been dated A.D. 1315 ± 55. If these results are accepted, our estimate of the length of occupation of Mayapan must be more than doubled, but this will not affect the chronology of its ruins relative to those of Chichen Itza, the abandonment of which must be moved back correspondingly in time.

Although the native and early Spanish accounts dealing with the history of Mayapan are too obscure and too contradictory to serve as a reliable guide for archaeological interpretations, we gather that Mayapan flourished in an interval of relative stability and prosperity falling between two periods of conflict and upheaval. There was a broad political organization covering most of northern Yucatan and centered at the capital, where the lords of the various provinces resided, leaving matters of local administration to appointed governors. The highest office was, at least for a time, held by men of the family named Cocom. Their rule was challenged by another family, the Xiu, and a violent revolt is recorded in which the Cocom ruler was killed. The accounts do not make clear whether the Xiu family then succeeded to the supreme office, or whether the revolt ended with the destruction of the city. The abandonment of Mayapan, however, was a well remembered fact that served as a base for subsequent history. The dates usually given for the "foundation" and the "destruction" of the city are the Katuns 13 Ahau and 8 Ahau in the Maya count. These dates are generally accepted as A.D. 1263-83 and A.D. 1441-60 (or three years earlier). There is also reference to Mayapan in the following Katun 4 Ahau (1480-1500), which suggests the possibility of a brief reoccupation of the city, though there is no archaeological evidence to support it, and it is possible that the 4 Ahau referred to is that preceding the 13 Ahau which officially marked the "foundation" of the capital.

New forms of tools and weapons were doubtless introduced into Mayapan at various times, but a subdivision of its period of occupation on the basis of changes in artifacts is not feasible, since no form, unless it be that of the ubiquitous obsidian flake blade, is so numerous as to be represented in more than a very small fraction of the collections. Nevertheless, we distinguish three distinct classes of remains:

1. A small amount of preconstruction material that may be present in any lot but is more likely to be found in early strata or in those laid down on bedrock or sterile earth. This admixture is inferred from a corresponding admixture of Medium Paste Slate and associated pottery wares, occurring in some collections and indicating an occupation prior to any known construction at the site.

2. Material used or manufactured during the occupancy of Mayapan. This forms the bulk of all deposits, both under fill of constructions and in surface debris. All numerously represented types of artifacts, with the exception of some post-Columbian metates, can safely be ascribed to this category. Rare varieties of objects, which occur only in the earliest deposits, cannot be distinguished from remains of class 1, and we have been unable to define any types peculiar to the early stages of the city's growth. On the other hand, one can make the conjecture that some of the more numerous varieties that occur only in late constructions and in surface debris were not in use when the city was first founded. The absence of such varieties in any single deposit, however, is not sufficient evidence to ascribe the deposit to an early date, and the Mayapan Period is therefore described as a unit, although it is recognized that considerable changes took place during its course.

3. Post-occupational material: immediately pre-Conquest, colonial, and modern. There is no archaeological evidence of a major reoccupation of Mayapan after the violent destruction of many of its principal buildings. The Spanish conquerors mention no settlement there, although neighboring villages were occupied. When Stephens visited the site in 1841, the Rancho San Joachin, whose ruins are just northeast of the Main Group, was in use, and a few objects found in surface deposits can be attributed to its occupants. Since its abandonment, cattle have grazed on the site and portions of it have been under cultivation. Villagers use a number of trails and roads that cross the ruins, and from time to time excavations have been made in the larger mounds by hopeful treasure hunters, and more recently by archaeologists. The admixture of recent material in the Mayapan collections is nevertheless very small. A few specimens are

easily recognized as post-Columbian. The date of others, limited to surface material and intrusive matter, remains somewhat questionable.

The copper and the small flake arrow points are the two traits that most clearly indicate the post-Classic date of the Mayapan collection. What chiefly characterizes the period, however, is a general decline in craftsmanship, which is as conspicuous in the manufacture of tools and ornaments, particularly those made of stone, as it is in the architecture and in the ceramics of that period. The artisans of Mayapan were appallingly indifferent to perfections of form or niceties of finish. Although this can be attributed in part to the use of inferior materials, the choice of such materials was probably not so much imposed by necessity as itself the result of setting a higher value on time- and trouble-saving devices than on the quality of the finished product. Precision and formal order are indispensable ingredients of a style or tradition, and the rarity of characteristic forms at Mayapan is probably symptomatic of a deep social disorder that led to the period of political disruption and cultural poverty in which the Spaniards upon their arrival encountered the Maya.

ALTAR FIGURES: 38, including 3 doubtful examples. (Figs. 1-5.)

These small carved figures are ritual objects of a special class, distinct from other small sculptures of Mayapan. In size, they range from 10.5 to 42 cm. Only two are more than 30 cm in maximum dimension. The material is white or gray limestone of varying quality, though never of exceptionally fine grain. Many specimens have been calcined and have lost their original hardness. Bits of plaster coating were noted on one specimen, but as a rule there was no sign that they had been coated or painted. Most specimens were found in surface deposits, however, and their finish may have worn off with long exposure.

As the name implies, altar figures are most often found near altars in shrines, and their distribution clusters on the ceremonial districts of the city. A number come from domestic shrines of large houses located near the Main Group. Others are associated with religious buildings and colonnaded halls. Two were found directly in front of altars and apparently in place. It may be significant that no identifiable fragments were found in sealed fill.

There are no comparable objects in the remains of earlier Maya cities. Altar figures seem to be uniquely associated with the shrine-ritual complex that includes elaborate figure incense burners and that we believe was brought to Mayapan from the east coast of Yucatan. Although no altar figures have been reported from there, Gann (1927, p. 132), describing a small shrine not far from Tulum, mentions three stucco turtles that suggest a very similar idea.

Outside the Maya area, only the small zoomorphic sculptures of the Aztec bear any resemblance to Mayapan altar figures, and even these lack the characteristic symbolism. In the Museo Nacional de Antropología e Historia of Mexico, however, there is a larger sculpture portraying a man inside a turtle shell (Mexico, 1934, p. 21), which recalls one of the common altar-figure motifs.

The motifs appear to derive, at least in part, from Maya mythology as it is expressed in the codices. The countenance of an old man with a prominent nose and a mouth empty of teeth except for two protruding from the corners has been identified as the face of God D (Schellhas, 1904, p. 22), and the identification finds support in the occurrence at Mayapan of the name glyph of this god, usually read as "Itzamna" (CR 29, fig. 12,o). God E, the young corn god, is also represented. Among the animals, which include also the jaguar, the snake, and the iguana, the one that occurs most frequently is the turtle. Its significance in this context is obscure. Forstemann considered the turtle or tortoise to be a symbol for the summer solstice (Forstemann, 1904, pp. 423-30). In the Motul Dictionary (Martínez Hernández, 1929) it is linked with the constellation Gemini and adjacent stars, and some scholars associate it with Orion. On altar figures, the turtle motif is often combined with the figure of God D, and this conception has a precedent in low-relief atlantean figures at Chichen Itza, particularly those on the façade of the Lower Temple of the Tigers, where an old man wears a cloak representing the carapace of a turtle. In spite of the facts that God D is one of the principal Maya deities and that the turtle seems to have astronomical associations, one cannot entirely rule out the possibility that altar figures may also have totemic significance. Totemism is not characteristic of Maya culture, but the Books of Chilam Balam have passages referring to groups of persons by animal names, and it is not improbable that some ruling families, especially those of non-Maya origin, made use of totemic symbols. In the context of altar figures, the old man may represent a generalized idea of an ancestral figure rather than a specific deity, and this seems more consistent with the fact that, in one case, two, and in another, three, almost identical altar figures were found together in a single location.

The peculiar way in which the symbols are combined recalls the genre of stone yokes from Veracruz. In both arts, a dominant animal form (in Veracruz, the "saurian monster" or frog; at Mayapan, the turtle) occurs either independently or in various combinations with a human form. The dominance of the two motifs varies, but in all variations the animal determines the general form and the composition of the carving. Thus, even the fully anthropomorphic altar figures are shown in crouching position and with a mantle on the back that corresponds to a turtle's carapace. Likewise, the animal-bearing-burden motif is echoed in the form of human figures, with head thrown back so that the headdress rests on the shoulders, creating an almost identical mass composition (cf. fig. 3,f, 4,d). This imposition of the form of one motif upon the explicit expression of another is not altogether unknown in Maya art. The turtle altars of Copan and Quirigua employ a similar device, but with superimposition rather than actual substitution of motifs.

In the following paragraphs, the pieces are grouped according to the dominant symbol expressed, though sometimes the fusion of themes makes a categorical distinction difficult.

Turtles: 21; 12 complete, 7 broken, 2 fragments (one fragment doubtful). (Figs. 1, 2.)

The sole example of a completely naturalistic rendering of the turtle is the fragment in figure 1,a, and there is considerable doubt that this is an altar figure. It was found on the surface, in a residential section of the city, and may be a piece of architectural sculpture from an earlier period, analogous to the sculptured turtles on the House of the Turtles at Uxmal. As a rule, turtles carved in the local style show either strong formal simplification or some sort of symbolic elaboration. The markings of the carapace are transformed into simple patterns that have only a minimal relation to natural forms. The flippers are often rendered as mere blocks, and the tail may be attached to the carapace as in figure 1,b. This neglect of functional relations was noted as a trend already beginning in Maya art in Cycle 10 (Proskouriakoff, 1950, p. 151). At Mayapan the focus of attention is on symbolic expression, and little interest is shown in accuracy of representation. Considerations of anatomical structure were clearly secondary in the eye of the artist. The form of the specimen in figure 1,c, however, is, even in the context of this art, extreme in its neglect of specific detail. Possibly this is an unfinished piece. Under the carapace, which shows faintly marked-out divisions, there is no indication of flippers, but the bottom has a slight hollow.

Occasionally hieroglyphs are carved on the carapace of the turtle. In figure 1,g the glyph Ahau, lightly incised, is repeated on rounded plates along the edge. The nose of the Ahau is represented by two parallel lines, in the manner of the Maya codices. A more specific statement, 8 Ahau, appears in figure 1,f. Unfortunately, the companion glyph, which had a coefficient of 10, is missing. These two glyphs could stand for the consecutive Katuns 10 Ahau and 8 Ahau, or could designate a Tun 10 in a Katun 8 Ahau. One might wonder if this is the fateful Katun mentioned in the Books of Chilam Balam, always bringing woe to the Itza, sending them to wander "under the boughs to their sorrow." On the turtle in figure 1,h there are nine hieroglyphs, but they are too heavily eroded to be made out. The first glyph may be a day Ahau with a high coefficient. The details of others are not at all clear, and the signs appear to be somewhat corrupt in style.

When the turtle is combined with parts of a human figure, wherever the human features are clearly discernible they reflect the personality of God D (fig. 2). The head of the deity may appear in the beak of the turtle or may be directly attached to the body in lieu of the animal head. Sometimes it is turned sharply upward, and often the front flippers are replaced by human arms and hands holding a pair of round objects.

Five of the turtles have a small receptacle hollowed out in the center of the carapace. The round receptacle of the large turtle in figure 2,e was fitted with a stone lid and contained a cache, probably of two obsidian flake blades and some fragments of sting ray spines; owing to a discrepancy in field notes there is some uncertainty about the contents. This turtle was found placed over a looted cache in front of an altar in a shrine of a colonnaded hall. It seems to have originally been embedded in plaster upside down above the cache, for its back was covered with a thick layer of mortar and gravel, sealing the receptacle (fig. 2,f). This is the only example we know of such a figure being permanently set in place or buried, though one specimen, figure 1,m, showed traces of adhering mortar when found, and another, figure 1,d, was placed in front of an altar over a looted cache that had been carefully refilled but left unsealed.

The turtle receptacle finds very close parallels in pottery specimens, effigy bowls sometimes serving as cache vessels. In this form the turtle is also often combined with the physiognomy of an old man. Two turtle vessels found in situ each contained a single obsidian lancet blade. This suggests an association of turtle receptacles with blood-letting rites, which may or may not be specific to the cult represented. At Chichen Itza, a pottery vessel in the form of a turtle, containing various small objects, was found under the sill of the Caracol tower (Ruppert, 1935, fig. 278).

In addition to the illustrated stone turtles described in the legends of figures 1 and 2, four badly broken specimens were found in the following locations:

At Str. H-18a, in surface debris near the shrine: two fragments, one showing part of a plain carapace and front flippers indicated by simple protuberances (dimensions: 20.6 by 19.7 by 11.8 cm); another of a carapace with incised lines crossing at right angles (17.7 by 16.8 by 10.8 cm) (CR 34, p. 455).

At Str. H-17a, in surface debris near shrine (CR 28, fig. 2,n).

At Str. T-70, in shrine at base of stairway. Half of a plain carapace, two flippers blocked out and a stubby tail (15.1 by 7.6 by 5.7 cm).

A small stone turtle from Mayapan (fig. 52,a), now in the Peabody Museum of Harvard University, has not been included in the above count.

Crouching gods: 9; 7 complete, 2 fragments. (Fig. 3.)

The animal characteristics of figure 3,c are in such close balance with its human traits that it might have been put with equal justice in the turtle group as with figures that are essentially anthropomorphic. Most of the human figures, however, retain only a semblance of the animal form. The three representations of God D in figure 3,d-f wear heavy mantles under which their reduced limbs are folded in a crouching pose. All three were found in or near domestic shrines on the periphery of the Main Group. Figure 3,d is a particularly well carved piece, and in the rendering of the face and in the design of the serpent headdress can be observed the changes that had taken place in artistic detail since the great period of Maya art. The roughly blocked-out masses of the earplugs and the headbands are characteristic of a late style, and a telling detail is the fillet with two spaced dots attached that encircles the serpent's eye. This form is also used in the Dresden Codex and on the murals of Santa Rita. The front view of the figure shows a necklace, elongated like the necklaces worn at Chichen Itza, and with widely spaced attached pendants.

When other personalities are represented, the analogy to the turtle motif tends to fade, and the pose of the figure resembles more the pose of a diving god than of a crouching animal. The mantle worn by the young corn god, God E (fig. 3,g), no longer simulates a carapace, though the principal elements of the turtle motif all have counterparts in this design. The headdress is a scroll of traditional form that goes back to the Classic era of Maya art, but is distinguished from earlier forms by the characteristic symbol that appears on the central leaf element in the form of a circle with widely spaced attached dots, stylistically similar to the serpent eye just described. This element occurs repeatedly in the art of Mayapan and is one of its characteristic features. Figure 3,i is another young god, apparently in diving position. This figure holds two round objects, while God E and a small fragment of another figure (fig. 3,h) hold only one. The nature of these objects is not clear. They are not held in the upturned hand as balls of copal are, but neither do they seem to have handles, as would be expected if they were meant to represent gourd rattles. They are probably, however, the same objects as those held by the turtle figures, and they appear to have a strong symbolic association with altar figures in general.

Animals with burden: 5. (Fig. 4.)

A grotesque animal or a serpent head with a smaller figure riding on it occurs as a column elaboration of a temple, Str. Q-159, replacing the conventional serpent-column motif of the Toltec. There is also, in the court north of the Castillo, a large serpent head with a small human figure shown riding upon it. The conception, which seems to be a late one, includes various zoomorphic forms. In the case of the altar figures, the animal is most often a feline, though at least one is a reptile. In the simplest version of this motif (fig. 4,b), echoes of the turtle form seem to remain. Although the animal has ears and claws, its body is rendered as a separate form with a short tail emerging as if from under a carapace. The animal most strongly suggested is an armadillo, but there is no indication of plates and it is equally likely that its grotesque form has no specific reference. On the back, this creature bears a simple rectangular receptacle. More often the burden is a human figure, apparently with no characteristics of a deity, and in figure 4,a it has in its hands the same round objects that are held in the hands of the turtles. The jaguar in figure 4,c is rendered with extraordinary realism, but in figure 4,d, which is essentially anthropomorphic, the feline motif is expressed mainly in the headdress. Here the burden is a coiled snake and the form of the bearer is essentially that of the old man or crouching God D. Again, as with the crouching gods and turtles, we seem to have an ambiguous form halfway between the crouching god and the burden-bearing jaguar.

The most interesting piece of this group and perhaps the most representative of the art of Mayapan is the scaled monster in figure 4,e, a reptilian grotesque of uncertain genus. Among the scales on its right side is inscribed 4 Ahau; correspondingly on the left is 13 Ahau; and on the back of the small human figure is 1 Ahau. All three are names of Katuns prominent in the chronicles of the Books of Chilam Balam: 4 Ahau is given as the date for the meeting at Chichen Itza of the "four divisions" that were to become the rulers of Yucatan, for the Great Descent and the Little Descent, and for other events that seem to refer to the initial organization of the ruling families; 13 Ahau is associated with the founding of Mayapan, with the arrival of the Xiu, and with the "setting in order of the Mat," which may refer to the organization of the central government at the capital; 1 Ahau is in some sources given as the date of the destruction of Chichen Itza, which elsewhere is said to have occurred in 8 Ahau. Thus, the two glyphs on the sides may commemorate the foundation of a ruling family and its establishment at Mayapan, though the relevance of 1 Ahau in this context is not entirely clear. Although the specific interpretation of the glyphs is mere conjecture, their presence here is certainly suggestive of a continuity of traditions from Mayapan to colonial times.

Unclassified: 3. (Fig. 5.)

Figure 5,a: A fragment showing the head of an iguana with the head of God D in its mouth. This clearly belongs with the class of altar figures described, but as only the head remains we do not know whether it is one of the burden-bearing figures or something different.

Figure 5,b: The head of an old man, possibly God D, with a serpent headdress, apparently emerging from a shell. The rendering of the eye of the serpent is here typical of the Mayapan style. This sculpture has traces of plaster on the surface and cannot be identified surely as an altar figure. It may be part of a small idol, of which there are several examples in Mayapan, or a piece designed to be set in masonry.

Figure 5,c: A unique piece representing two human heads carved at right angles to each other. The head to the right is the upper surface of the piece shown on the left. This sculpture also is a very doubtful example of the altar-figure class and is included here only because of its general form and size.

INANIMATE RITUAL FORMS: 6. (Fig. 6.)

Together with altar figures, or in locations very similar, are found small carvings representing inanimate objects of a ritual character. Two are replicas of rectangular shrines with four doorways (fig. 6,a,b). Both have a slight hollow in the base, possibly to set them firmly in place or to conceal some small object underneath. The significance of the hieroglyph inscribed on the roof of the shrine in figure 6,a is unknown. There are no rectangular shrines with four doorways at Mayapan, but they often occur on the east coast, where they may have considerable antiquity. The general idea of an open shrine was apparently familiar. At Itzmal 'Chen (Mayapan) there is a round shrine with four doorways, and elsewhere shrines built against terraces are open on the three freestanding sides.

Figure 6,c represents a tripod bowl containing some sort of offering, but figure 6,d is probably an altar with a three-member molding and a bulbous top, such as we find in connection with ceremonial buildings at Mayapan. Figure 6,e is a receptacle, evidently representing an upturned carapace of a turtle. It was found in the debris of a small temple or shrine that had its altar completely torn out in ancient times, and may very well be an altar piece used in an analogous way to a turtle sculpture. Figure 6,f is the same scroll that is worn by God E in figure 3,h. The "serpent-eye" symbol again appears on the central leaf element. The ritual character of all these motifs and the uniform size of the pieces suggest that they are functionally related to altar figures and may be altar pieces of a similar type.

MISCELLANEOUS CARVINGS: 19. (Fig. 7.)

Numerous fragments of sculpture have been recovered at Mayapan, chiefly from surface debris but occasionally also from sealed deposits. Only those that are probably neither architectural nor monumental are mentioned here. The choice, however, is somewhat arbitrary, for many pieces are broken and weathered, and the function of others remains problematical. None but the altar figures and the related inanimate forms constitute groups that can be regarded as functionally or stylistically uniform, but some others may represent types that do not occur here in sufficient numbers to be identified. Undoubtedly there are also some individual pieces that are by nature atypical.

Figure 7,a, flat carving of a fish head (?), is possibly a ritual form like the carvings in figure 6. In general shape and size it closely resembles the scroll in figure 6,f, and its association with a small temple is altogether consistent with the possibility. If it is an altar piece, it is the only one of its kind that has been found in an early sealed deposit. The inanimate ritual forms, however, may originate earlier than the numerous turtles and crouching gods of surface finds.

Figure 7,b: A unique form that also may be related to the altar pieces or may be an architectural ornament. It is quite plain and flat, and there is no indication that the stemlike part at the bottom was used as a tenon. The same type of tenonlike projections occur on the pieces in figures 6,f and 7,a.

Figure 7,c: Fragments of a small statue, buried in a cache at the entrance of the main pyramid temple. Figures such as this, with puffy cheeks and eyes, occur at other sites in Yucatan, notably at Xculoc, where they are pictured as small atlanteans dressed in feathered or quilted garments, and where they served as elements of architectural decoration in a building of Puuc type (Maler, 1902, fig. 9). At Oxkintok, a similar figure is carved on a column (ibid., fig. 97,a). Evidently this motif is locally traditional. In pottery it has a wider distribution, and is found on figurines from Alta Vera Paz and from the region of Las Tuxtlas, Veracruz. In the Mayapan version there is no quilted garment, and the carving seems more consistent with the contemporary style than with the earlier Puuc. A much cruder version of the same face was found in the form of a large tenoned head in the debris of Str. H-15 (part 2 of this volume, fig. 8,d).

Figure 7,d-g: These four heads, probably from small idols, illustrate a variety that suggests no single clear type. The last looks as if it might be foreign. Its flat head with a knob on top recalls many small idols that have a wide distribution from Nicaragua to Veracruz. Possibly we have here a late influence from an alien popular tradition. Figure 7,f, on the other hand, came from one of the earliest deposits and resembles sculptures of the Puuc style.

Figure 7,h: Head of a parrot; fragment. The motif is unique, and the traces of blue plaster on the surface are more suggestive of a masonry ornament than of an altar piece.

Figure 7,i,j: Forms similar to these, but much larger, were apparently inserted in the earplugs of masks at Chichen Itza. The small plugs, however, are not round in section and could hardly have been used in this way. Their location gives no clue to their function, and although there are simple forms, with no carving, of comparable shape and size (fig. 20,f-h) they are problematical pieces also. The specimen in figure 7,j comes from an early deposit.

Figure 7,k-q: The small carvings in this group, though they have little in common, are all more crudely fashioned than the ritual sculptures so far described. Possibly they are products of home manufacture by unschooled carvers, or represent rural types not often found in an urban site. Some of the smaller figures recall the "Camahuiles" of the Quiche region of Guatemala. In Mayapan they do not seem to play a significant role, but more excavation in outlying house mounds might reveal that such small carvings are more common than we now suppose. The sculpture of the monkey in figure 7,q may be an early piece.

Other unclassified sculptures from Mayapan include: a paddle-shaped piece (CR 14, fig. 10,e); a fragment, no. 54-19, showing the wings of a bird; and a badly weathered piece, no. 54-249, 11.8 by 9.7 by 6.7 cm, with a small, round projecting head and crudely indicated features.

UTENSILS OF LIMESTONE AND CRUDE CHERT: 1028 (Figs. 8-20)

In addition to metates and manos, which constitute the standard equipment of Maya homes, ancient and modern, Mayapan has produced more limestone tools than any other Maya site, but there is little standardization in the form of these tools, and they are for the most part rudely fashioned. Some forms, such as the stone balls or spherical hammerstones, are ancient and widely distributed in Middle America. Others, such as the "pot lids," may be peculiar to the period and the locality. Particularly numerous and varied are the rubbing and abrading stones, many of which were used by masons for spreading or smoothing plaster. The absence of such tools at Uaxactun, where plaster work was as common as at Mayapan, suggests that other materials were earlier employed for this purpose. The number of limestone specimens we find at Mayapan and their undifferentiated nature may be evidence of a general decline in technical specialization, leading to the use of a material readily available and requiring little shaping or preparation.

At present we can only speculate on the function of most of the tools that we find. It is perhaps fair to assume that many of the larger and ruder forms were used in masonry construction. If so, the contrasting techniques of finishing masonry at Chichen Itza and at Mayapan should be reflected in different tool complexes at these sites. Unfortunately, as Morris has remarked (Morris, Charlot, and Morris, 1931, 1: 211), there is a scarcity of such tools at Chichen Itza. It may be of interest, however, that the pointed pecking tools he presents in figure 128 (see fig. 52,b) have not turned up at Mayapan, and there is only one example here of a grooved hammer. Aside from these two forms, and the pot lids which occur at Mayapan but are missing from Chichen Itza, the collections of tools from the two sites differ mainly in the number of specimens found. Since Mayapan material occurs in post-occupational debris at Chichen Itza it is difficult to judge how radically the tool complexes of the two sites really differed. Comparison with Puuc collections should give a more clear-cut picture, but such collections are not yet available. One gets the impression that rude limestone tools had replaced tools of other material at Mayapan, although the very nature of such implements, often amorphous and fragmentary as they are, raises the possibility that they are often overlooked or neglected when attention is focused on fine and whole specimens.

METATES: 726, including fragments. (Figs. 8, 9.)

Legless trough metates: 711; 320 whole, 391 broken or used in construction. (Figs. 8,a-m, 9,a-d.) Lengths: 31 to 65 cm, av. 50.86 cm. Widths: 25 to 65 cm, av. 42.66 cm. Heights: 10 to 46 cm, av. 21.52 cm. Trough widths: 16 to 35 cm, av. 23.83 cm. Rims at near end: 0 to 22 cm, av. 11.18 cm.

The legless trough metate is typical of Mayapan and was probably the only type manufactured in the city. Other types occur in lava and granite, but limestone tripod metates are very probably post-Columbian; if there are any ancient variants, they occur only as exceptional pieces. The trough metate is a simple block of stone, with a groove or trough worn by rubbing with a mano somewhat shorter than the width of the block. The trough usually begins about 10 cm from the near end of the block and is open at the other end. The floor slopes sharply down from the rim and may be horizontal or ascending gently at the far end. In cross section, the trough usually has steep sides and a very gently rounded bottom. Corn was ground in these metates with the type of mano designated here as "blunt-ended." The length of such manos is on the average 6 or 7 cm less than the average greatest width of the troughs.

In over-all form, the metates vary considerably, since many were made of building blocks without deliberate shaping. A few of the stones can be recognized as of Puuc workmanship, and one metate of exceptionally fine white limestone (fig. 9,c) was found in a sealed cist beneath construction. Other specimens are of ordinary limestone, and many are irregular in shape. Those in figures 8,a and b are typical. Figures 8,c to m show variations, none of which is numerous or of such character as to suggest type subdivisions within the class. In the most common variation the trough is made on a sloping surface, the near end of the block, with the rim, being considerably higher than the open end (fig. 8,c). In others the trough rises to rim level at the open end (fig. 8,e), or runs the length of the stone (fig. 8,g,h). One metate was made from a column drum, and is round (fig. 8,i). Evidently any stone of convenient size and form could be used without special preparation, though probably most were trimmed for the purpose. Secondary use is indicated in figure 8,j, where a second trough was worn in the floor of an old metate. In two unusual specimens a cut was made in the open end, one round, the other wedge-shaped (fig. 8,k,m). Very likely these cuts are secondary, made when the metates were re-used for some other purpose.

Discarded metates were frequently re-used as building blocks, and 202 specimens are reported from constructions in which they were used for facing or were thrown in with fill.

The forms found at Mayapan do not differ essentially from the common forms at Calakmul and at Chichen Itza; the type seems to be widely distributed and probably goes back at least to Classic times. Strömsvik (1937, p. 127) expresses doubt as to its antiquity, however. The metates that I have chanced to observe in the Puuc region and at Dzibilchaltun were of the same general type but tended to be deeper and to retain a rim on the far end.

Tripod metates: 15 fragments. (Figs. 8,q, 9,e.)

Tripod limestone metates are even now in common use in Yucatan, and most of the fragments recovered from the ruins can be identified as recent by the sharp intersections of their surfaces resulting from the use of modern tools. At least six such specimens (fig. 8,q) were found near the ruined Rancho San Joaquin and probably date from the period of its occupation. No whole metate was found, but the type is well illustrated in Strömsvik, 1931, figure 1 and plate 2. It has two small legs aligned with the far corners, and a taller, sharply tapering leg, aligned with the near end. The grinding surface is curved lengthwise, sometimes in a gentle S curve, and is almost straight from side to side. The manos used with these metates are longer than the grinding surface, and are probably those we designate here as the "knob-ended" type.

Although the limestone tripod metate is predominantly post-Columbian, at Chichen Itza there are slightly different tripod forms classed by Strömsvik as ancient. Such forms, if they occur at all at Mayapan, are represented only by two or three odd fragments, among them that in figure 9,e, which has a leg of unusual form and a trough on the grinding surface. It seems likely, therefore, that the tripod was not made in limestone until after the abandonment of Mayapan, and that the ancient tripods of Chichen Itza represent a late pre-Columbian reoccupation of the site. The modern form seems to derive, not from these latest limestone specimens, but from an older lava form, of which at least two fragments were found in construction at Mayapan (fig. 21,f), and which has angular legs aligned with the corners.

TROUGH: 1. (Fig. 8,p.)

Although most metates have an open trough, some are ground down only in the middle and retain a rim all around. The trough is usually shallow, and the specimen in figure 8,p seems to be exceptional. Strömsvik (1931, pl. 2f) suggests that a similar trough from Chichen Itza may be a water-container.

MORTARS AND STONE VESSELS: 5; 2 unshaped, 3 fragments. (Figs. 8,n,o; 9,f,g.)

Two blocks of stone, observed lying on the surface by Ruppert and Smith in their survey of house mounds, have round depressions that could have served as mortars, but as no pestles were picked up in the vicinity their use is uncertain. It is equally questionable that the fragments of three stone vessels to be described were used for grinding, and their designation as fragments of mortars is tentative.

Figure 9,f shows a fragment of a tripod bowl made of gray limestone. Although its diameter could not be measured, it was certainly fairly large: about 30 to 50 cm at the base and expanding upward. The interior is evenly curved and, though not polished, appears smoother than the exterior.

Figure 9,g is a smaller bowl, with no traces of feet. The evenly curved interior strongly suggests that this was a mortar, though the surface is eroded and is not now entirely smooth.

Number 55-263, Lot A-508, not illustrated here, is a fragment of a rim of a reddish limestone vessel. The side appears to be straight and at least 6 cm high. Thickness is 2.4 cm. The rim is rounded. The fragment is too small to permit even an approximate restoration of the form of the original vessel.

PESTLES: 5. (Fig. 10.)

Lengths: 5.5 to 7.5 cm; max. diam. 4.1 to 5.0 cm. Two of fine-grained crystalline limestone. All polished on grinding surface.

Pestles are rare in collections from the lowland Maya area, though they are a common form elsewhere in Middle America and occur even in pre-Classic deposits from Mexico (Vaillant, 1931, pl. 88). It is doubtful that their presence in Mayapan has any great significance, especially since no single type of mortar seems to be associated with them. The specimen in figure 10,a is from an early Mayapan deposit. It is of fine stone and resembles in form the end of a knob-ended mano. Its grinding surface, however, is well smoothed down, and the resemblance is probably fortuitous since manos of this sort have not been found elsewhere in sealed deposits.

CORN-GRINDING MANOS: 46; 18 complete, 14 broken, 14 small fragments. (Fig. 11.)

Blunt-ended: 41; 16 complete, 12 broken, 13 fragments. (Fig. 11,a-g.) Length: 12.6 to 23.5 cm, av. 17.1 cm. Max. diam. or width: 5.5 to 11.4 cm, av. 8.1 cm. Min. diam. or thickness: 4.0 to 10.2 cm, av. 6.1 cm.

These are the manos with which corn was ground in the common trough metates found at Mayapan, and their forms, especially in cross section, are strongly modified by use. They taper only slightly toward the ends and usually have a clearly marked, well polished grinding surface lightly curved both longitudinally and transversely. The ends tend to be rounded, though originally they may have been square-cut, and there is considerable variation in cross section. Some sections are almost round; others are elliptical; and a few are trapezoidal, rectangular, or polygonal with rounded corners. There are no truly circular sections, but manos of finer-grained stone tend to retain round or elliptical form (fig. 9,a,e). Those of coarser stone have at least one markedly flattened surface, and occasionally two (fig. 9,b). Some, however, were flat or faceted to begin with, and five specimens have a single grinding surface and a clearly ridged or humped back (fig. 9,f,g).

The mano in figure 9,c has a deep round pit near one end. This pit appears to have been naturally formed by erosion, but there is a similarly placed pit on the re-used fragment in figure 12,f, on a mano from Chichen Itza, and again on the reworked tool in figure 15,c. Mercer (1896, fig. 49) illustrates a fifth example from the cave of Loltun, Yucatan. It strains credulity to attribute all these occurrences to mere coincidence, and one wonders if the pits were not intentionally made, although they have no obvious function and to my knowledge have not evoked comment before. Since collections are seldom illustrated *in toto* there may be similar specimens from other regions that have not been recorded.

Like most large stone artifacts, manos are most often found in surface debris, but eleven specimens were recovered from cists and tombs. Only once (Lot A-587) was a mano clearly associated with a burial. This mano was badly battered on what apparently was its grinding surface. A metate was present, and there were two skeletons in the grave, one male and one female.

The blunt-ended manos of Mayapan are essentially identical to the manos most commonly found at Chichen Itza, although Strömsvik (1931, fig. 5) illustrates a somewhat more restricted range of cross sections. A mano with a rectangular cross section is mentioned in his tabulations, however, and if such forms are more rare at Chichen Itza, the use of a better grade of stone may easily account for it. As a general type, the blunt-ended mano is probably ancient and wide spread in the lowland Maya area. At Uaxactun the "flat type" (Kidder, 1947, fig. 77,a) is well within the range of forms found at Mayapan, as is the round limestone mano found in San José Period 1 and 2 deposits (J. E. Thompson, 1939, table 14). In spite of almost no data on manos of early epochs in Yucatan, there is little reason to doubt that the blunt-ended form goes back to comparably ancient times here with little significant change, but possibly with minor variations in typical cross section.

Cigar-shaped: 3; 2 complete, 1 broken. (Fig. 11,h,i.) Length: 18.5 to 22.9 cm. Max. diam.: 7.4 to 9.0 cm. Min. diam.: 7.1 to 8.0 cm.

Made of unusually fine-grained limestone, these manos are ground very smooth except for the transverse facets at the ends, but show no sign of use whatever. They taper evenly toward the ends and are round or elliptical in cross section. The two complete specimens are surface finds; the broken one was found under the floor of a late structure.

No similar pieces occur in the collections from Chichen Itza.

Knob-ended: 2, broken. (Fig. 11,j.) Original diam. near end: 5.2 cm. Least diam.: 4.2 and 4.4 cm.

The knobbed form results from using a mano longer than the grinding surface of the metate. These specimens are round in section, but the wear producing the knob is mainly on one side, which is slightly flattened. The original surfaces of the manos were smooth except on the ends, and the form tapers only very slightly.

Both fragments were found on the surface and could have been deposited when the city was already in ruin. Since they could not have been used with ordinary trough metates, it may be assumed that they were designed for the rare limestone tripod metates, which also were found only in surface debris. Knobbed manos from Chichen Itza have a similar association with tripod metates and differ from Mayapan examples only in being worn evenly instead of on one side. Although in the Maya area the knobbed mano appears to be very late, it may have a much earlier distribution in Veracruz. In Weiant (1943, pl. 70, figs. 16, 23) are two forms that suggest fragments of such manos, though they are not so identified in the text.

RUBBING STONES: 49 (7 doubtful). (Figs. 12, 13.) See also: Subspherical stones, Subcylindrical hammers, Bark beaters, Polishing pebbles, and Other fine abrading tools, below.

Stones used for rubbing, smoothing, and polishing had no specific design, but appear in a great variety of forms. Often tools originally fashioned for some other purpose were later used for abrasion, acquiring flat, smooth, or even highly polished facets, which here are used as the main criterion of their identity. Broken tools were sometimes used without trimming or were reshaped to more convenient form, and even unworked stones of suitable size and shape were utilized as rubbing implements. Plaster polishing or smoothing seems to have been the most common function of these tools, and often traces of plaster and occasionally of red paint adhere to the edges of the working surface. It is difficult to see why more specimens of this nature have not been reported from other Maya sites, particularly from Chichen Itza, where continuity in types of basic implements would be expected. Kidder (1947, p. 38) comments on the absence of plaster-smoothing tools at Uaxactun and suggests the use of wood for this purpose. Possibly wood was the preferred material, and stone was substituted at Mayapan only because it was more readily available or more easily worked. This may account for the fact that there are no really specialized forms in stone and that whatever was at hand could be adapted or reshaped into a plaster-smoothing tool.

Plaster-smoothing manos: 21; 15 complete, 6 broken (or re-used fragments). (Fig. 12,a-f.) Length: 10.0 to 19.3 cm, av. 14.3 cm. Width: 6.8 to 9.7 cm, av. 8.3 cm. Thickness: 4.0 to 6.8 cm, av. 5.0 cm.

Many rubbing manos are almost identical to corn-grinding forms, being distinguished from them only by the fact that their working surface is flat and does not have the slight longitudinal curvature characteristic of manos used with metates. On the average, however, rubbing stones are slightly shorter and flatter than manos, being designed to be manipulated with one hand. Two specimens are made of reddish limestone that is not seen often at Mayapan. The longitudinal edges of rubbing stones tend to be straighter than those of manos, and sometimes there are two flat surfaces, resulting in a strictly rectangular section. One particularly large mano (fig. 12,c) is grooved on the sides, as if to provide a firmer grip on the stone. Some of these tools, like the one in figure 12,b, appear to be ordinary manos re-used for spreading or smoothing plaster; others may have been broken or shortened manos, as that in figure 12,e. No doubt many specimens were made specifically for the purpose. With broken fragments it is not always possible to tell whether the stone was used for rubbing before or after the break. Plaster adhering to the broken surface of some stones suggests that use was made of pieces from broken manos; other fragments included in this group were clearly broken after use. The forms are extremely variable and seldom run true to type. The smaller flat rectangular forms like that in figure 12,d grade imperceptibly into the less specialized stones of the next group.

Flat plaster-smoothing stones: 8; 7 complete, 1 fragment. (Fig. 12,g-j.) Average dimensions: 8.9 by 7.9 by 4.1 cm.

These forms no longer resemble corn-grinding manos. They are roughly shaped flat stones of a size that can readily be grasped in the hand. Two have parallel rubbing surfaces, and one is carefully squared. The round stone in figure 12,i is probably the end of a mano with its broken transverse face polished smooth by rubbing. Traces of plaster were noted on four of the specimens.

Plaster-smoothing stones with high grip: 4. (Fig. 12,k-n.)

Two of these stones, having well shaped tenons that seem to have served as a grip, resemble similar implements of finer gray stone from Labna, now in the Peabody Museum at Harvard. Two others are simply unshaped stones with a rough body projecting upward. Plaster adheres to the edges of the smooth surfaces on all four specimens.

Small forms of fine limestone with rubbing facets: 6. (Fig. 13,a-d.)

These smaller forms are made of very fine-grained gray or white limestone. Figure 13,a is a fragment of a plaster-smoothing stone, with plaster very clearly adhering to the edge of the working surface. It has somewhat the form of a mano but is much smaller and is made of exceptionally fine, compact stone. The other stones in this group are irregular in form and have one to four very smooth facets. Some have traces of plaster, and others do not. Very probably they had various uses, now impossible to determine.

Problematical faceted forms: 4. (Fig. 13,e,g-i.)

The large tool shown in figure 13,h is triangular in section and has flat rubbing facets that probably justify classing it with rubbing stones rather than with manos, although the manner of its use is questionable. The facets are smooth but not polished. A similar stone in figure 13,g is an irregular pentagon in cross section and is made of hard, exceptionally fine-grained limestone. Although there are small bits of plaster adhering to its surfaces, neither specimen shows such traces as would identify it as a plaster-smoothing mano, and it is not clear whether these aberrant forms correspond to some specialized function or are random variations of manufacture or use. The faceted tool in figure 13,i is even more divergent from the common varieties. It is also pentagonal in section, but tapering in form and with sharp edges. Its battered ends suggest that it may have been used for pounding and may be misplaced in the category of rubbing stones, but the hammering tools of Mayapan are quite different in form and dimensions, and it seems reasonable to assume that the facets were functional. Figure 13,e is another unique specimen. In cross section it is essentially rectangular with corners cut by narrow longitudinal facets. All the surfaces are very smooth, and the material is fine-grained, compact white limestone.

Unclassified fragments: 6. (Fig. 11,f.)

Among unusual fragments are two of plaster-smoothing stones (nos. 55-577, 55-605) that look as if they may originally have had the general form of manos, except for the fact that they are extraordinarily flat: 2 and 3 cm in maximum thickness. The rubbing surface makes a sharp intersection with the unused surface of the stone. Another, no. 53-6, may be the end of a mano, but is irregular in form. Two small mano-like forms, nos. 52-112 and 55-635, are too battered to be identified, but are classed as rubbing stones on the ground of their general size and shape. The piece shown in figure 11,f is oval in section and has a flat rubbed facet, oblique to the long axis. The material is dense gray stone, and the tool may be an unworked piece of stalagmite used to hone a machete in recent times.

Other tools re-used for rubbing. Aside from the tools discussed in this section, others often show rubbing facets that sometimes suggest specific uses. Spherical and subspherical stones were adapted for grinding or rubbing, and bark beaters for smoothing plaster. Small polishing pebbles, which probably were used in pottery making, sometimes show traces of plaster, and the specialized subcylindrical hammer seems to combine rubbing and pounding functions. All these are described under headings that indicate their original use or characteristic form.

SUBSPHERICAL STONES: 83. (Fig. 14.) Ave. max. diam. 6.9 cm.

Spherical stones are reported from many cultures in Middle America, both early and late. Although many different uses have been ascribed to them, their function remains undetermined. Kidder's suggestion that some were used as hammerstones in stone working at Uaxactun (Kidder, 1947, p. 37) seems also to apply at Mayapan. The stones are often heavily scarred or deformed by use. Most often the scars are such as might result from pounding or hammering on stone, but, judging by the differences in wear, even as hammerstones these tools must have had many different functions. There is reason to think that some were used for abrasion as well as for pounding or pecking. The range in size, in regularity of form, and in quality of surface finish is also considerable, but apparently random. It is possible that some of the smaller, relatively smooth stones were not tools but ritual "divining stones." They were not found in groups, however, and on the basis of form and size no sharp distinction can be drawn as was done at Uaxactun. The only two specimens that can clearly be separated from the others are two small, round, unaltered pebbles, and the circumstances of their occurrence did not clearly establish that they were objects of use and not accidental inclusions in masonry.

Normal hammerstones: 62. (Fig. 14,a-f, j-m.) 55 of limestone; 7 of flint. 30 scarred, 5 strongly deformed by battering; 5 fragments. Max. diam.: 4.5 to 10.5 cm, av. 7.0 cm.

These hammerstones are seldom truly spherical, and some, probably from long and violent use, are flattened to little more than half the maximum diameter. A small number apparently were never shaped to form, such as the flint nodule in figure 14,f, which shows use on the edges. At the Peabody Museum at Harvard there are several flattish pieces of flint similar to this but apparently chipped to form. These stones come from Labna and may represent a common Puuc form. The majority of hammerstones at Mayapan are of limestone and have a roughly pecked surface, but the finish varies greatly, some stones being almost smooth while others are so rough that scars of use are not apparent on them. Figure 14,j-m illustrates different ways in which the stones have been worn, depending on the material and on the force of the blows to which it was subjected. It is evident that a hard flinty limestone was preferred, but many stones are of poor material and none is made of the finer-grained limestones that were sometimes selected for rubbing stones.

Smooth and faceted spheres: 13. (Fig. 14,g-i,o,p.) 7 definitely deformed by use in grinding or rubbing. Max. diam.: 4.3 to 9.1 cm, av. 6.3 cm.

The stones in figure 14,g-i have flat facets too smooth to have been formed by pecking and too sharp to have been the result of faulty shaping. These stones are obviously not hammerstones but may be tools for grinding or rubbing. Two other examples, however, have scars that suggest their use for pounding also. One stone has smooth, very slightly concave parallel facets that may indicate wear or may have been intended to give a better grip on the stone. The remaining specimens of this group show evidence of grinding or smoothing on the surface, with more or less distinct faceting (fig. 14,o). Figure 14,p represents a small, smooth stone which seems too light to have been used as a hammer, and which shows no traces of wear.

Other aberrant forms: 6.

The stone in figure 14,q has two rough depressions set close together. These seem little more than hammering scars, but an identical specimen from Chichen Itza suggests that the depressions were made with intention, and a roughly spherical stone from Labna with similar grooves was used for rubbing. One is reminded of more finished stone balls with handles, like the specimen from Zacualpa illustrated by Lothrop (1936, fig. 65). Another aberrant subspherical stone with a light ridge on its circumference was covered with patches of red paint, which would have made it unadapted for use as a hammerstone. A stone ball similarly sprinkled with red hematite was found in excavations at Zaculeu (Woodbury and Trik, 1953, p. 225). The remaining four of this group are stones of irregular form that show considerable battering and that may be unaltered stones utilized as hammers (fig. 14,n).

Round pebbles: 2. (Fig. 14,r,s.) 2.4 to 3.0 cm diam.

Both these pebbles were found in surface debris, and neither has distinguishing features that would identify it as an object of value. One has a light groove on the surface, but this may be of natural origin. Pebbles of this size, however, are not commonly included in the masonry of Mayapan, and in view of the ritual use of such pebbles elsewhere in the Maya area it seems wise to include them in the collection as objects of possible significance.

SUBCYLINDRICAL HAMMERS: 5. (Fig. 15,a-e.) Length: 7.6 to 10.5 cm, av. 9.3 cm. Max. diam.: 6.1 to 7.7 cm, av. 6.9 cm. Min. diam.: 5.1 to 6.1 cm, av. 5.6 cm.

These tools appear to be fragments of manos or rubbing stones rounded at the ends by pecking. As a class they are not conspicuous for uniformity, but a comparison with the more carefully worked form in lava (fig. 22,g) shows that their variations center on this cylindrical shape with rounded ends, best exemplified in figure 15,c. Each of these tools has at least one rubbing facet. In contrast to the other surfaces, which are smooth, the ends are roughly pecked (b,c,e) or pounded (a,d). Sections are oval, and in one stone (fig. 15,d) pentagonal. One similar specimen made from a granite mano and pecked only on one end is reported from Chichen Itza, but as a type this tool does not seem to appear in published sources.

MISCELLANEOUS POUNDING TOOLS: 5. (Fig. 15,f-j.)

In figure 15,f,g are shown aberrant forms of hammerstones, one oval and one in the form of a pestle, but with a uniformly pecked surface. Figure 15,h is a small grooved hammer, and figure 15,i a fragment of what may have been a larger grooved maul. At Chichen Itza grooved hammers are found frequently, but at Mayapan they are exceptional. Both h and i were surface finds. Figure 15,j is probably the end of a small mano broken and re-used for pounding. Its broken surface is flat but is scarred on the edges. It is quite possible that other fragments of manos were used in this way, but the effects are not always so clearly distinct from the normal wear of a broken surface as they are in this piece, which is made of flinty resistant material.

BARK BEATERS: 11; 9 complete, 2 fragments. (Fig. 16.) Length: 7.5 to 10.6 cm, av. 8.9 cm. Width: 5.2 to 8.7 cm, av. 6.6 cm. Thickness: 3.0 to 5.2 cm, av. 3.9 cm.

These tools are oval, with the exception of one, which is roughly triangular with rounded corners. They have two parallel flat or lightly convex faces, one or both scored with longitudinal grooving. A hafting groove, about 1 cm wide, sometimes encircles the implement and sometimes is interrupted at one end. Two specimens stand out as of exceptionally fine workmanship (fig. 16,a,b). They are made of very fine-grained, hard limestone and are scored with deep triangular grooves so true and regularly spaced that they appear to have been ruled. On one specimen the spacing is 2.6 and 5.2 mm on center, and on the other 5 mm and 1.1 cm. The faces are perfectly flat, and the hafting groove on the one implement that is complete is interrupted at one end. The contrast between these specimens and others from Mayapan is so sharp that one suspects that the well made ones are not of local manufacture or that they are survivals from an earlier period. Several very like them are reported from Chichen Itza, Labna, and other Yucatan sites, and it is possible that they will prove to be typical of Yucatan workmanship in Classic times. Two specimens (fig. 16,c,d), one of which (fig. 16,c) was found in a deposit known to be early, have flat faces but are not so well shaped or so accurately scored. On the majority of specimens neither the form of the tool nor the grooving is true, and the faces tend to be slightly convex. On one specimen the scoring is little more than irregular scratching.

At least four and possibly five bark beaters had been re-used as rubbing stones (fig. 16,h-k), and in the process the scoring had been partly or completely obliterated. Traces of plaster in the hafting grooves show that the handles of these tools had been removed before the tools had been converted into plaster-smoothing stones.

''POT LIDS'': 55; 46 chipped on both faces, 4 chipped on one face only, 5 with cut edges. (Fig. 17.)
Max. diam.: 6.6 to 15.5 cm, av. 10.3 cm. Thickness: 1.4 to 3.8 cm, av. 2.6 cm.

Most of these disc-shaped stones are roughly chipped along the edges from both sides. The form is seldom true, but several examples are almost perfectly circular and are neatly finished on both surfaces (fig. 17,e). Often one side is more humped than the other, and in several specimens it remains the original surface of the stone from which the fragment was broken before it was trimmed (fig. 17,h). Occasionally the edges had been cut or ground rather than chipped (fig. 17,g). These discs are usually called ''pot lids,'' and one was found in association with a small vessel (CR 36, fig. 7,p). Although it is not certain that this was their primary function, the fact that many were made of inferior stone that would hardly be used for a tool makes it quite probable that they were no more than covers. They are not known to occur in Classic Maya sites, nor are any reported from Kaminaljuyu or from Chichen Itza. Vaillant (1931, pl. 89) publishes a lava disc from Ticoman which he surmises was used as a jar cover.

POLISHING PEBBLES: 13. (Fig. 18.) 3 used on plaster. Max. dimensions: 3.7 to 6.7 cm.

Kidder (1947, p. 38) comments on the lack of any stone tools at Uaxactun suitable for polishing pottery. At Mayapan, small pebbles of fine-grained limestone with flat, often polished facets could have served this function very well. Three of the larger specimens have plaster adhering to the sides and back, suggesting that they were used for smoothing stucco, either on architectural reliefs, when a small tool was required, or on plaster-coated vessels. The larger pebbles, which tend to be of softer stone, are more strongly flattened than the smaller ones, but all are of fine-grained material and show signs of long use.

OTHER FINE ABRADING TOOLS: 4; 1 of chert. (Fig. 19.)

Figure 19,a: a small, unworked piece of chert or quartz, highly polished on one surface. This could have served the same purpose as the polishing pebbles, or it may be a tool used in the lapidary craft.

Figure 19,b: a polishing pebble remarkable for having a distinctly concave rubbing facet on one side. Less-worn surfaces on the two other sides also have a slight tendency to concavity, and both flat faces show smoothed and flattened areas.

Figure 19,c: a small pebble of fine-grained, hard, white limestone with a deep trough curved slightly longitudinally and strongly laterally. The form is identical to that of a somewhat larger stone from Uaxactun, which Kidder (1947, p. 38 and fig. 78,a) believes was used for sharpening implements of wood or bone.

Figure 19,d: a small tool, triangular in section with one flat and two lightly curved sides. All surfaces are very smooth. The form resembles that of a small pestle, but the strong faceting suggests other uses.

UNIDENTIFIED LIMESTONE FORMS: 20. (Fig. 20.)

Small cube of limestone. (Fig. 20,a.)

Two fragments of unidentified tools. (Fig. 20,b,c.) Possibly honing stones.

Unshaped piece of hard limestone. (Fig. 20,d.) Possibly used for honing.

Fragment of stalagmite. (Fig. 20,e.) Apparently shaped, but possibly natural. Rough fragments were often used to support high-relief stucco or freestanding parts of stucco figures. This piece is unusually smooth and well shaped and may be an artifact.

Five small limestone forms. (Fig. 20,f-j.) The largest, i, may have served as a plug. Others are similar to polishing pebbles, but show no rubbed surfaces, and are of softer stone.

Perforated stone. (Fig. 20,k.) Perforated stones of this general nature are reported from various localities, but it is questionable that they represent a specific type. A perforated discoidal stone from Uaxactun is illustrated in Kidder, 1947, figure 78,f.

Five pieces of red, clayey limestone. (Fig. 20,m-p.) Some apparently shaped to roughly spherical or cylindrical form. All have rubbed flat facets. The stone or clay is very soft and powdery, and the objects are probably lumps of material rather than artifacts.

Two flat fragments of calcareous stone. (Fig. 20,q.) These pieces are amorphous, but each has one flat and one very faintly concave surface. The unillustrated fragment is 1 cm thick and 3.8 cm in maximum dimension. The larger fragment is of reddish, the smaller of white and yellow, stone showing parallel strata in section. They resemble pieces of onyx marble vessels, but are thicker than most fragments found elsewhere.

Two fragments of a cylinder about 7 cm in diameter, of red flinty stone. Possibly fragments of round mano or roller.

Fragment of conical or tapering form of poor limestone, possibly from a large leg of a metate.

UTENSILS OF UNPOLISHED IMPORTED STONE: 46

METATES AND GRINDING STONE: 19

Lava metates: 17; 2 complete, 15 fragments (5 doubtful). (Fig. 21.)

Both complete metates (fig. 21,a,b) are of the same tripod form, with two very short round legs at one end and a larger tapering oval or rectangular leg at the other. In plan they tend to be rectangular but with strongly rounded corners. The grinding surface extends the width of the metate, and is longitudinally curved and strongly tilted. Both metates were found in surface debris.

One of the fragments in the collection has round legs at one end, and one has a large rectangular leg set in from the edge (fig. 21,e,g). These were probably similar to the complete metates. At least one other type, however, is represented. This has sharp corners, with legs aligned on the edges, and resembles modern limestone metates illustrated by Strömsvik (cf. fig. 21,c,f, with Strömsvik, 1931, pl. 2,a-d). Fragments of both the lava types have been found in the later constructions of Mayapan. Neither, however, is reported from any volcanic region where it might have been manufactured. Since the sharp-angled type seems to be the prototype of the modern metate, it would be particularly interesting to discover its source and to learn whether it has any specific association with round-ended houses, which so far have not been found as a pre-Columbian form in Yucatan. Other form variations include a fragment with very low round feet but with sharp corners (fig. 21,d) and a stub of a large round leg (fig. 21,i).

Metate of granitic (?) rock: 3 fragments. (See CR 29, fig. 24,j.)

The fragments are about 3.6 to 4 cm thick, gently curving on the under surface to a rounded edge. They all come from one location and are probably parts of a single metate. There is no indication of legs, but no fragment is large enough to make it certain that the form was legless. The grinding surface is smooth and slightly concave.

Flat grinding stone: 1. (Fig. 21,h.) Vesicular lava.

This stone is too small to have been used for grinding corn, and its working surface, though apparently used, is perfectly flat. Stones of this sort may have been used for grinding squash seed or other materials required in small quantities. Although this specimen is unique in our collection, some smaller fragments identified as pieces of metates may come from similar grinding stones.

MANOS: 8

Cylindrical: 4; 1 complete, 3 fragments. (Figs. 22,a, 21,b.) Vesicular lava.

These manos are very nearly cylindrical, though tending to be oval in section. One specimen shows a strongly flattened facet. The mano in figure 21,b is slightly longer than the width of the grinding surface of the metate near which it was found.

Blunt-ended: 2 fragments. (Fig. 22,b.)

These tend to be thicker and less tapering than the limestone forms. One specimen is of vesicular lava, another of a more compact volcanic or igneous rock.

Square-section: 1 fragment. (Fig. 22,c.) Vesicular lava.

Knob-ended: 1 fragment. (Fig. 22,d.) Dark, compact volcanic or igneous rock.

This fragment of the unreduced end of a worn mano is essentially like the forms in limestone. The end is rounded and smooth, and the implement may have been used as a pestle after it was broken. The original mano was apparently round in section, but was reduced to almost triangular form by grinding on three facets. Like the limestone objects, it was a surface find.

RUBBING STONE: 1. (Fig. 22,e.) Vesicular lava.

Although this stone is badly eroded, its original working surface retains traces of polish. This surface is strongly convex longitudinally, and the polish is banded in the same direction, suggesting that it was used lengthwise rather than laterally.

SUBSPHERICAL HAMMERSTONE: 1. (Fig. 22,f.) Vesicular lava.

The somewhat squarish form of this stone is unusual but probably within the range of irregularities that would be found in a representative collection of spherical stones. No signs of use are apparent, though a piece has been broken off.

SUBCYLINDRICAL HAMMERS: 3. (Fig. 22,g-i.) Vesicular lava.

All three specimens have been fashioned from broken manos, but one is of standard cylindrical form with evenly rounded ends, whereas the others have rubbing facets and appear to be no more than pieces of manos worn on the broken surface by their use for pounding.

UNIDENTIFIED OBJECTS OF VESICULAR LAVA: 2. (Fig. 22,j-k.)

The knoblike form in figure 22,k may possibly be a bark beater broken in half. Although it is somewhat too circular and too rounded, one illustrated by Kidder, Jennings, and Shook (1946, fig. 61) is not too different in form. The other fragment (fig. 22,j) is rectangular and may be part of a metate leg, but there is a shallow groove on one face that looks as though it might have been caused by the use of the stone for shaping an implement.

All the lava tools except some fragments of metates were found in surface deposits. It is not likely, however, that they are of post-Columbian date. Their very small numbers indicate that they were not regularly imported, and the chances of their occurrence in sealed deposits are not great enough, considering their size and durability, to give significance to their absence.

WHETSTONES AND HONING TOOLS (?) 8; 1 complete, 7 fragments. (Fig. 23.)

Pieces of gritty sandstone and of schist were evidently used as abrading stones and perhaps specifically for sharpening blades and pointed tools of wood, bone, and other materials. Although some pieces are shaped there seem to have been no established forms, and other honing stones were probably natural pebbles picked up on trips to other regions rather than regularly traded tools.

Sandstone: 6 fragments.

These pieces of sandstone differ in form and in material, but all except one are gritty in texture and have at least one concave surface worn down by use. Two of the specimens (fig. 23,a,f) were completely worn through by being worked from both sides. That in figure 23,b has a flat bottom and resembles a metate fragment, but the irregular form of its trough makes it rather unlikely that it was used with a mano, and we believe it was probably some sort of whetstone. The piece in figure 23,c was used both on its face and on its edge, which has a shallow groove. The broken discoidal artifact in figure 23,e is of harder, less gritty material than the others. The shallow depression in the center is roughened, but possibly by erosion rather than by wear.

Unlike the tools of lava, which are essentially of one material and had certain established forms, these pieces are heterogeneous. Although some may have been fashioned, their use as sharpening stones was probably secondary, and as a class they can hardly be considered artifacts or articles of trade.

Schist: 2; 1 complete, 1 fragment.

The one complete object of this finer-grained stone (fig. 23,g) seems to have been used for sharpening pointed instruments. It is probably a natural piece of stone rather than one intentionally shaped. As for the fragment in figure 23,h, there is even some doubt that it was formed by use and is not a naturally worn piece.

OTHER TOOLS AND FRAGMENTS: 4. (Fig. 23,i-k.)

These include a flat, oval disc of fine-grained red stone, polished on all surfaces (k); a flat fragment also of dark red stone (j); a small piece of silicified wood (i); and an amorphous piece of basalt 6.0 by 5.2 by 3.9 cm. One surface of this stone was the natural exposed surface of rock, with a reddish tint permeating about 1 cm into the stone. Another surface appears to have been artificially smoothed.

POLISHED CELTS: 21; 10 complete, 11 fragments. (Fig. 24.)

Small, dark green celts: 19; 8 complete, 11 fragments. (Fig. 24,a-f.) Length: 3.9 to 7.7 cm, av. 5.7 cm. Width: 2.4 to 4.5 cm, av. 3.3 cm. Thickness: 0.8 to 2.4 cm, av. 1.5 cm.

At Mayapan, the smaller celts form a homogeneous group distinct from the two larger specimens in the collection. Such a distinction has not been noted in the Guatemala highlands, where celts have a greater size range. None of the published collections, however, are large enough to show whether the sizes have a bimodal distribution or whether there are any consistent differences in wear or form as between celts of different sizes. The small celts at Mayapan are characterized by a lack of polish on the sides and butt and by the gradual diminution of the polish with distance from the bitt. This makes it very unlikely that the tools were hafted, as Woodbury has suggested for the celts found at Zaculeu. The bitt is gently curved and a little off the perpendicular to the axis. It is not sharp but seldom shows regular nicking or other wear. In two specimens there had been a break at one of the corners, which was later smoothed down. Either these tools were constantly honed to keep the edge clean, or they were not used as hatchets but as rubbing or scraping tools. They are admirably adapted for the flaying of game and the scraping of hides or any operation for which a particularly sharp blade is not required. Whether such common tasks would justify the importation of specialized tools, however, may well be questioned, since local chert could probably have served the purpose just as well. Whatever their use, it is clear that, unlike the jade carvings, they were acquired through an established trade that supplied a very specific demand, either by a direct route from the highlands, or more probably from coastal ports commanding traffic with the interior of Guatemala. That they were valued highly is suggested by the fact that virtually all complete specimens were surface finds, although a number of broken pieces were found in fill and with burials under floors.

The material of the celts is very dark green to black stone, dense and capable of a high polish. Mineralogically it may vary. One specimen from Mayapan has been identified as jadeite; another very similar to it from Guatemala was found to be epidote schist with jadeite. The usual form tapers toward the butt and is a flat oval in mid-section, but at least two fragments have parallel edges, and one of these has a sharply rounded bitt and is much flatter on one side than on the other. The polish on this celt is confined to an area within 1 cm of the bitt on the convex side. This fragment was found in one of the earlier deposits. Another exceptional fragment has polished edges and shows a sharply flattened facet 1 cm below the butt end on one face. Both these features may be the results of re-use.

Large polished celts: 2. (Fig. 24,g-h.)

The celt in figure 24,g is made of translucent blue-green jade with diffuse milky flecks and in form is not unlike the smaller celts, although it is longer than the average and has straighter sides. Unlike the small celts, however, it has a polish evenly lustrous on all surfaces except on the butt, which is unfinished, and on one side where there is a flaw in the stone. The bitt is nicked in several places, but otherwise shows no wear. In view of its unusually fine material and its location in the front room of one of the grander houses, this celt is better classed as a ritual object than as an implement of a craft.

In contrast to this specimen, the celt in figure 24,h has an edge that shows considerable battering, as one would expect if it had been used as a hatchet. The material is a speckly, light blue-green rock with a bright sparkle and has a low polish. The implement is thickest at the butt end, and the sides have almost no taper.

SMALL CARVINGS: 6. (Figs. 25, 27,a.)

There is very little reason to suppose that Mayapan had its own lapidary craftsmen, or even that there was an established trade in jades and other fine worked stones besides the small celts. The common practice of removing the precious contents of caches and graves before new constructions were begun, and their looting at the time of the city's abandonment, no doubt greatly reduced the number of luxury objects that otherwise would have survived; but, even with this in mind, it is possible to infer that trade in such objects must have been small and sporadic, particularly in the carvings, for no two pieces in our scant collection can be attributed to the same industry or even to the same period of time. If they were acquired in regular trade, it must have been a trade in antiques and curios rather than one serving an established industry.

Classic Maya jade pendant. (Fig. 25,a.)

This is the only piece carved in the Maya style, and it is of a period many years before the existence of Mayapan. The style is clearly Late Classic of a naturalistic school which may have been a precursor of more stylized Late Classic pieces characterized by a similar headdress and a mouth curved sharply downward, and identifying a very well known type (Smith and Kidder, 1951, fig. 4). The material is gray-green jade, highly polished but of uneven color. The surfaces seem worn as if with long use. One long lateral perforation suggests that the pendant was strung on a necklace, and the smaller biconical perforations in the earplugs and collar were probably for attachment of minor beads. The source of the piece is unknown, but the facial type is somewhat suggestive of the Usumacinta region.

Jade pendant. (Fig. 25,b.)

The form of this pendant is somewhat like that of a celt. It has the same sort of lateral biconical perforation near the top of the head as the piece just described, but the technique of carving and the style are entirely different. They conform to no well known type, but the distinctive rendering of the eyes, executed in fine incision with a drilled hole in the center, occurs on some pieces from British Honduras, notably from Tzimin Kax and from the Pamona site, and also resembles that seen in designs on marble vases from the Ulua Valley. In view of the trade known to have been carried on between Mayapan and the region of Chetumal, it seems likely that this pendant reached Yucatan by this southeastern route.

Nephrite turtle. (Fig. 25,c.)

The turtle motif is so common at Mayapan that one would be tempted to conclude that this small carving was locally made were it not for its sharp stylistic contrast with other sculptured pieces from this site. Although the form is radically simplified, it has none of the conventions and crudities of the Mayapan style. We cannot at present, however, designate a style to which it might belong or the locale of its manufacture. The material is a nephrite, probably one of the varieties classed by Foshag (1954, p. 20) as "actinota" and distinguished from the true and more dense nephrites of other regions.

Basalt mask. (Fig. 25,d.)

This carving is clearly in the Olmec tradition, but it lacks the subtle refinement of forms characteristic of the best schools and is somewhat harsh in the lines of its features. The head is squat in proportion, and the triangle that so often reflects the construction of the Olmec nose and mouth is not evident in this face. Other unusual features are the oval, almost round eyes, and the round earplugs placed on the conventional elongated Olmec ears. One might question whether this is a genuine Olmec antique or whether falsification of antiquities was being practiced in Mayapan times as it is today.

Axe-form sculpture. (Fig. 27,a.)

This piece appears to be badly worn and is carved in a primitive style with shallow grooves and simple fine incisions. The stone is nowhere polished, though it is smooth in the grooves, and is of a texture resembling serpentine, with inclusions of a blue-green mineral that may be jade. The back of the piece is unfinished, but the whole tends to have a celtlike form tapering to a rough edge at the broad end.

Broken pendant? (Fig. 25,e.)

The original form of this object was probably something between an oval and a rectangle with a marked concavity on one face. It seems to have been broken in half, but the edge of the break was smoothed so that now it does not have the texture of a fracture. If we assume that originally this ornament was symmetrical on the groove that begins on the concave side and continues on the reverse, then we may also expect that it had two small biconical perforations on the top edge, by which it was meant to be fastened. In its present form it is difficult to see how it could have been used as an ornament. It may have served, however, as some sort of tool, possibly for sharpening or polishing other implements. A very similar object from Veracruz is published by Strebel (1885-89, pl. XVI, no. 24).

STONE BEADS: 74. (Fig. 26,a-i.)

The collection of stone beads from Mayapan excavations is extremely small. Most of the beads were recovered from caches, where they were placed singly or in small groups of not more than four together with shell beads and other objects. No assemblages of stone beads were found with burials. With two exceptions, the material is jade or jade-like stone of highly variable quality and color, and the beads conform to no standard, presenting few definite types. A clear distinction, however, can be made between beads of inferior stone and those of brilliant hue and high polish. The latter are seldom shaped and consist mainly of small perforated chips and pebbles (fig. 26,h). It is clear that material was highly prized for its quality, and that good jades were extremely rare. Jades of inferior quality include stone of dark, mottled blue-green color, gray-green, gray, and a pale greenish white. Most of them have an even, low polish, but some are spotty in finish with green inclusions that have a higher luster than the rest of the stone. Except for the carved tubular beads, there are no distinct specialized types, and the gross distinctions of form followed here are probably of minor significance.

Limestone bead: 1. (Fig. 26,a.)

One of the few carved beads. Made of very soft material, it shows traces of a white lime coating which probably once was painted. The perforation is cylindrical and unusually small.

Large tubular bead: 1 fragment. (Fig. 26,b.)

Carved tubular beads: 4; 3 complete, 1 fragment. (Fig. 26,c.)

These beads vary in size, form, and material, but all have a simple band carved at one end. They almost certainly were designed to hang vertically, possibly from earplug flares, but at Mayapan they do not, as elsewhere, occur in pairs, and no jade earplug flares have been found with which they may have been used. Quite possibly, therefore, they were adapted for other purposes and served as beads or pendants.

Large spheroid bead: 1. (Fig. 26,d.)

Other spheroid beads: 26. (Fig. 26,e.) Largest: max. diam. 25 mm. On axis: 17 mm.
Smallest: diam. 6.5 mm. On axis: 4 mm.

None of these beads is truly circular in cross section, and all are flattened on the axis, sometimes with a distinct flat facet. Biconical perforations are only slightly more frequent than cylindrical ones. The edges of these perforations are often rounded. Only two beads have conical holes, and on one of these radiating lines are incised on the face with the smaller opening.

The material varies in color, is often mottled, and seldom has a good polish.

Cylindrical and discoidal beads: 6. (Fig. 26,f.)

Tubular jade beads, such as are found at other Maya sites, are represented here only by the large bead and the carved specimens already described. The straight-sided beads of this group are of miscellaneous proportions. Five of the specimens are completely blackened, apparently by burning. Since these specimens are not a set but come from different locations, one must suppose that their material was particularly susceptible to discoloration. The only truly tubular example is made of unusual light green stone flecked with yellow, and has a cylindrical perforation.

Barrel-shaped beads: 10. (Fig. 26,g.)

This form is also unstandardized and includes long beads of various shapes and materials. Two of the beads have subrectangular sections and virtually no curve to the sides. One of these has holes drilled transversely. A unique specimen is a bead with sharply curved sides and an evenly black surface, probably produced by burning.

Flattened barrel-shaped beads: 6. (Fig. 26,i.)

Although it is difficult to judge on the basis of such small numbers, the average quality of the jade in this group appears to be superior to that of the others; the largest specimen, however, is not of jade but of calcareous stone. Some of the specimens, for instance that in the upper right of figure 26,i, are exceptionally well made. The flattened forms probably served as the central element of necklaces of smaller beads.

Irregular forms of bright jade: 19. (Fig. 26,h.)

These probably were prized as the true gems of Mayapan. All the pieces have a vivid color and high luster. Some are bright green; others are white streaked with light green. A few examples are shaped as flat beads, and there is one well shaped small pendant, but the majority are very little altered and probably are chips rejected from larger carvings or tiny pebbles polished and perforated. Similar tiny beads of bright jade were found in a single assemblage at Nebaj (Smith and Kidder, 1951, p. 41 and fig. 63,a). Only the finest stone was treated in this way, and at Mayapan there are no larger pieces of comparable quality.

The perforations are most often biconical, but the drills were evidently not pointed, for at the juncture of some of the drill holes the truncation at the tip of the cone can be seen. Three specimens have conical and three have cylindrical perforations.

JADE FRAGMENTS AND PEBBLES: 6. (Fig. 26,m-p.)

Four of these specimens were found in caches. They include an unworked jade pebble, a form like a barrel-shaped bead but unperforated, and two fragments with polished surfaces. The fragment of very dark green jadeite (fig. 26,o) with two parallel polished surfaces is unusual.

ROCK CRYSTAL FRAGMENTS: 3. (Fig. 26,r.) Largest dimension 1.2 cm.

Clear transparent quartz crystal. One fragment has a curved smooth surface; others show only fractured surfaces. All found in caches.

QUARTZITE FRAGMENT: 1. (Fig. 26,q.)

Flat fragment with cut edges, one surface slightly convex and polished. Gray. Surfaces possibly discolored by burning.

IRON PYRITES SQUARES: 2. (Fig. 26,k.)

No mosaic mirrors or mirror backs have been found at Mayapan, and these two squares may be odd pieces used for their ornamental value. There is no indication of their manner of use.

MISCELLANEOUS FORMS: 4

Limestone prism: 1. Small, square prism of gray, fine-grained stone. Length: 1.75 cm. Section: 1.25 by 1.25 cm. Smooth surface. Lot A-71.

Small pebble. Calcareous brown pebble, highly polished. (Fig. 26,j.)

Small knob of unknown material. (Fig. 26,s.) Soft calcareous stone, light blue. Knob grooved around base and at top.

Mosaic flake. Polished green stone, probably jade. Rectangular: 3.5 by 2.0 by 0.5 mm. In altar cache, Lot C-81.

OBJECTS OF CHIPPED FLINT: 982

(including 732 chips, blanks, and rejects)

Unlike shell working and other minor industries that were not greatly affected by the violent events of Yucatan's late history, the working of flint at Mayapan had greatly changed since Classic times, not only in the forms produced but also in the general quality of workmanship and material. Although we may ultimately find that different flint deposits were used in different localities at this time, the small collections from near Mayapan that show strong admixtures of earlier material also have a much larger proportion of fine brown and opaque gray flints, which occur at Mayapan very rarely. This may argue that sources of a material formerly accessible had somehow been cut off or that the greater effort necessary to secure flint of good quality was no longer economically feasible.

The flint, or perhaps more properly chert, used at Mayapan is of indifferent quality, much of it grainy in texture or flawed by calcareous pockets. It varies in color and opacity, ranging from white, through semitranslucent light gray or buff, to darker translucent tones of the same colors. An occasional specimen is veined or streaked, and some show a light rosy or earth-red tinge. Many pieces are covered with a white patina that may reach a depth of nearly a millimeter. In some examples the patina covers broken surfaces and is evidently very recently formed. Its thickness makes it difficult to observe the nature of the original material without breaking or marring the specimens. The variations as a whole suggest the use of local deposits of chert and little discrimination in the choice of material.

The flaking technique is variable, but by and large inferior to that of all but the rudest tools of earlier times. Fine retouch and shallow flaking was reserved for special pieces that may have been made specifically for ceremonial use. In the manufacture of ordinary tools there is little specialization of form, and most blades and points, thick and irregularly shaped, grade from one form to another. The rarity of well shaped stemmed points, which are common at Chichen Itza, is particularly conspicuous, as well as the total absence of large celtlike forms, especially those with a polished edge, seen in other collections from Yucatan and from Classic Maya sites (e.g., E. H. Thompson, 1897, figs. 5, 8, 11, 12). These large choppers or spades were apparently basic implements in the Maya area, and their complete disappearance at Mayapan argues a major change, possibly in agricultural technique, especially since it is difficult to imagine another tool that could have replaced them. It is true that we have no evidence of their former use in the vicinity of Mayapan, but we know they occur at Chichen Itza and even more commonly in the Puuc, and their absence from Mayapan appears to have an historical rather than a regional significance. Several entirely new forms appear at Mayapan, notably a small form resembling a hatchet blade, and tiny side-notched arrow points, made by retouching thin flakes.

As a result of all these changes, the flint complex of Mayapan is sharply differentiated both from that of the Classic Puuc sites and from that of Chichen Itza, though material of Mayapan types occurs in surface deposits at Chichen Itza. In general, the differences seem to denote a decline in the craft of flint working and, beyond that, important basic changes in other techniques involving the use of flint tools. A detailed comparison of the flint material of various epochs is not feasible, for the collections available are either mixed or far too small to be representative. There can be no question, however, that the changes that took place in this industry were as fundamental as those in architecture or in pottery making, and some of them have significant implications in other fields than technology.

RITUAL FORMS: 30; 21 complete, 9 fragments. (Figs. 27,b-q, 28,a-g.)

The distinction between ritual and utilitarian forms, although not clear-cut, is based on the observation of a break in the otherwise continuous variations in quality of chipping and accuracy of forms. The truer forms and the finer retouch, moreover, are associated with a limited range of shapes, all of which are relatively thin in proportion to their size. Some of these forms are traditional and are similar to those found in caches of eccentric flints at Classic sites. Only one such cache, however, was found at Mayapan. It was placed in the fill of a circular platform, Str. Q-84, northeast of the main pyramid (CR 9), and it included the large blades in figure 27,c,d, the obsidian blade in figure 35,a, and possibly also the eccentric flint in figure 27,m, the stemmed point in figure 27,q, and the fragment, figure 27,e, which were found in the fill. The fill was unsealed, and therefore the cache could not be dated by the surrounding ceramic remains. Judging by its location in the structure, it probably belongs with one of the earlier phases of construction in the Main Group. Whether or not equally fine blades were manufactured in later phases we could not determine, though a number of well worked fragments appeared in surface debris.

Large leaf-shaped blades: 8; 3 complete, 5 fragments. (Fig. 27,b-e.)

Large flat blades, well shaped with even edges formed by fine retouch, and shallow flaking on both faces. Form slightly asymmetrical on the short axis and either pointed at both ends or with one end blunt.

Similar blades of the Classic Period, often found in caches, tend to be more symmetrical on the short axis. The Mayapan blades suggest that there may have been a more or less gradual transition from the laurel leaf form to that of the Aztec "sacrificial knife," which is widest near one of the points. A cache found by Brainerd in a stela platform at Santa Rosa Xtampak contained 35 Classic-type blades, and the Mayapan cache described above probably extends this Classic tradition. The earlier Santa Rosa blades are, as a group, more finely chipped than similar blades at Mayapan and are even thinner in section. Although fragments from Mayapan suggest that there was considerable variation in the quality of flaking, the specimens illustrated appear to be among the finer pieces in our collection. Specimens we have observed from the Puuc are, like the Santa Rosa flints, thinner and more finely chipped. They are often made of a finer brownish flint, and the regularity of their flaking may be due to the properties of the material as well as to finer craftsmanship.

Eccentric forms: 5. (Fig. 27,h-m.) Unique, thin, well shaped forms, probably manufactured specifically for ritual purposes; 3 arrowlike forms, 1 notched blade, 1 pelt-form flake.

The arrowlike forms of this group are not normally found in Classic caches, but their unusual shape and their flat fine chipping suggest that they are ritual eccentrics. The notched fragment in figure 27,i is similar to one with side notches that was found in a cache at San José, British Honduras (J. E. Thompson, 1939, pl. 26,d), and to another found with eccentrics at Naranjo (Maler, 1908, fig. 19, next to last piece). There is no doubt about the nature of the small peltlike form in figure 27,h. Almost identical but larger and less carefully shaped pieces were found in a cache under Stela D3 at Uaxactun (Ricketson and Ricketson, 1937, pl. 57,f,9). They are apparently related to the more elaborate trident forms commonly found in assemblages of eccentric flints at this site. Gann (1918) reports one from Santa Rita, British Honduras, and conjectures that it may represent a turtle. All these specimens are made from flakes retaining a part of the cortex. Their similarity in remains so widely separated in time illustrates the tenacity of some of the ancient ritual practices of the Maya.

Stemmed points: 7; 4 complete, 3 fragments. (Fig. 27,n-q.)

These large, very flat forms seem ill adapted for use as projectile points and are clearly distinguishable from the smaller functional forms in figure 29,ee-gg. They are probably spear points used in ceremonies and symbolic of prowess in war. Two types are represented: one, wide and flat with a dull point and a barely indicated stem, and another more pointed and with a clear shoulder. The specimen in figure 27,q was found in the fill of the circular platform that contained the cache of large flint blades, and is almost surely a ritual piece. The second type may have been functional, but one broken piece was part of a temple cache, and so also implies some ritual association. Moreover, this form figures with eccentric flints in Gann's excavations at Santa Rita (Gann, 1918). Both types are closely related to Classic forms, though not represented in exact duplicate.

Points with rounded base: 2. (Fig. 27,f,g.)

These two very sharp flat points also have analogies in the Classic period, and are distinguished from similar forms from Mayapan by their fine edges, their regular form, and their shallow chipping. Both come from the front room of an important residence.

"Sacrificial knives" or lance points: 8. (Fig. 28,a-g.) 7 complete, 1 fragment. Average dimensions: 3 largest, 16.7 by 4.3 by 1.2 cm; 4 smallest, 11.8 by 3.9 by 1.0 cm.

This form, gradually tapering toward one end and abruptly constricted to a point at the other, is very similar to that of a specimen found at Tula in a cache that apparently postdates the ruin of a Toltec building (Acosta, 1955, Lám. 16). It is distinct from the broader, flatter form of ceremonial knives associated with Aztec remains, though the two could be functionally similar. Examples of this form are rare in the Maya area. One resembling it closely, however, was found at Naranjo among ritual eccentrics (Maler, 1908, fig. 19, last specimen).

As a group, the knives of this form from Mayapan are poorly shaped, particularly at the short end. If this end was hafted the weapons probably ended in long, sharp points, but in all but one specimen the tips are broken and there is a possibility that the haft was attached to the narrower end. The chipping and the material of this group are far inferior to those of other ritual objects. In a number of knives the flint is badly flawed and the shapes tend to be asymmetrical. Ceremonial knives are not as clearly distinguished as other ritual forms from comparable utilitarian pieces. By and large, they tend to be flatter and to have better-finished edges than the group of knives in figure 28,o-u. Three were found with shallow burials just north of the main court in front of the Castillo (CR 9, p. 145 and fig. 1). Two appeared to be within the rib case of a skeleton, and one in the region of the pelvis of another individual. This suggests that they were used as weapons or for human sacrifice.

LEAF-SHAPED BLADES AND POINTS: 35. (Figs. 28,h-aa, 29,a-s,v-bb.)

There is so little standardization of flint forms at Mayapan that definite distinctions of types within the general category of flint blades and points are difficult to make, although it is clear that there must be functional differences as well as stylistic norms that guided their manufacture. The grouping presented here may err in making too fine distinctions in an attempt to avoid confusion of possible functional types, but any more comprehensive arrangement would require the choice of arbitrary criteria of classification, for the function of most of the implements is by no means apparent. Form is the primary criterion of the grouping as given, with technique and wear as secondary considerations.

Blades pointed at both ends: 2. (Fig. 29,a,b.) 12.2 by 5.0 by 1.8 cm and 9.7 by 3.9 by 1.4 cm. Wt.: 94 and 44 g.

This is an uncommon form, somewhat like that of the larger ceremonial blades in figure 25 but much thicker. The flaking is deep, and there is comparatively little retouch on the edges, which show no sign of use.

Long knives: 7. (Fig. 28,o-u.) Av. dimensions: large, 12.9 by 5.0 by 1.6 cm; small, 10.5 by 3.2 by 1.2 cm. Av. wt.: large, 100 g; small, 37 g.

As has been noted, these knives are not very different from the "sacrificial" knives of Mayapan, which may merely be more carefully shaped specimens of the same form. Nevertheless, these specimens are more often asymmetrical, seldom have sharp points, and are less definitely shaped at the blunt end. The forms are thicker on the average and more rudely flaked; the edges are sometimes unretouched, but show minute irregular nicks, apparently made by use. The flint is often flawed by limestone inclusions and is of poor quality.

Broad knives (or scrapers?): 6. (Fig. 28,h-n.) Av. dimensions: 7.2 by 4.0 by 1.3 cm. Av. wt.: 34.3 g.

This form is broad, has one pointed end, and is often markedly asymmetrical. The flaking is crude, and the material in two specimens is badly flawed. Two are definitely humped, though chipped from both sides. All but the apparently unused specimen in figure 28,m show wavy edges roughened by use. In all, the tip appears to be broken. Although we class these specimens as knives, their function is problematical.

Short pointed blades: 6. (Fig. 28,v-aa.) Av. dimensions: 7.4 by 3.3 by 1.2 cm. Av. wt.: 22 g.

These small blades are pointed at one end and blunt at the other. They form a group intermediate between the short knives just described and the sharp points to follow. They constantly tend toward a slight asymmetry in their form, and the edges frequently show signs of use. The specimen in figure 26,aa is exceptional in its flat form and in the quality of its material and workmanship. Though probably of Mayapan manufacture, it may be one of the earlier pieces.

Sharp points (blunt or rounded base): 7. (Fig. 29,c-i.) Av. dimensions: 8.8 by 3.6 by 1.1 cm. Av. wt.: 30.7 g.

This form is characterized by an extremely sharp, almost straight-sided point. The butt end varies, sometimes coming to a blunt point, sometimes being symmetrically round. In one specimen (fig. 29,d), it has the form of a rudimentary stem. Usually it is chipped to an edge, but in the specimen in figure 29,e it remains thick. The broken point in figure 29,c is somewhat aberrant in form. Specimens of this group represent a general type not sharply differentiated from pointed knives. The next group is probably a special variety of this type.

Sharp points with angle at base: 7. (Fig. 29,z-bb.) Av. dimensions (unrestored): 6.6 by 3.6 by 1.1 cm. Av. wt.: 19.7 g (broken point z omitted).

Although some specimens in this group are very similar to those described above, the special treatment of the butt ends of these points probably justifies setting them apart from others. They tend to be somewhat smaller than points of the previous group, and their butts may have been chipped down for the purpose of further reducing their weight. The butt end in this group forms an angle with the straight sides of the point and is distinguished also by its taper in thickness, which begins abruptly where the blade is broadest. As is true of most Mayapan flint types, the forms have considerable variation. Possibly these and the sharp points of the previous group were used as tips of javelins or darts. In Toltec representations darts are almost always shown with triangular points, and straight-sided points, either triangular or with side notches, from Chichen Itza probably represent this form. At Mayapan such points are exceptional and may have been superseded by this less-specialized form. Against this is the fact that the sides and even the butts of these points sometimes show fine, irregular chipping as if they had been used. Possibly this is merely wear or secondary re-use of these points as implements. At any rate the wear of the edges is not so consistent as to reveal definite differences of function between projectile points and knives, and often may be incidental.

MINIATURE BLADES: 9. (Fig. 29,j-s.) Av. wt.: 12.9 g.

If classed by their form a number of blades stand out from normal specimens of their respective groups by virtue of their unusually small size. Whether or not the small size has a functional significance, it seems best to treat these blades as a group apart. This group includes 1 oval flint, 2 elongated blades, 1 blade pointed at both ends, 3 knife-like forms, 1 blunt point, and 1 sharp point with a rounded base. The largest of these weighs 20 grams, and the smallest but 3. Almost every form of leaflike blade is represented in this group of smaller mavericks.

TRIANGULAR POINTS: 2. (Fig. 29,t,u.)

These two points were found together and are apparently exceptional at Mayapan. Both are broken at the tip and come to a sharp edge at the bottom, their thickest point being about 1.5 cm above the base.

STEMMED POINTS: 5. (Fig. 29,cc-gg.)

Points with rudimentary stem: 2. (Fig. 29,cc-dd.)

These points can scarcely be said to have a true stem, but their base is definitely marked off by a slight recurve, they are almost perfectly symmetrical, and they are clearly distinguishable from the short knives that have a similarly blunt point. Unlike the sharp point in figure 29,d, which also tends somewhat toward a stemmed form, these two points belong to no larger group represented here. They are unusually finely chipped. One was found buried in construction, and the other came from the same stratum in Cenote Ch'en Mul that produced two of the stemmed points. The specimen from the cenote is of much finer material and workmanship than are usually found at Mayapan, and very likely it is of earlier manufacture.

Points with tapering stem: 3. (Fig. 29,ee-gg.)

This form, which is essentially a Classic type, is common at other sites in Yucatan but is represented at Mayapan by only three examples. Two of them come from the lowest levels in Cenote Ch'en Mul, which also contain considerable amounts of Puuc period pottery. It is probable, therefore, that they belong to an earlier period of occupation and should not be considered part of the Mayapan complex, except in so far as it includes an admixture of earlier material.

ABERRANT POINTS: 2. (Fig. 29,hh,ii.)

Both points are broken at the base. That in figure 29,ii may belong to the class of broad knives. The point in figure 29,hh is exceptionally thick at the base, and may be merely a fragment of a larger form.

ARROW POINTS: 31; 30 complete, 1 fragment. (Fig. 30.)

There is good historical evidence that the bow and arrow were introduced into Yucatan only in very late times. The appearance in Mayapan of tiny points of flint and obsidian, weighing on the average no more than 3 grams, tends to confirm this, since no points of comparable size occur in earlier Maya sites. In Mexico, on the other hand, small points of obsidian are found in pre-Classic as well as in later sites, and there is a considerable range of forms and sizes. Side-notched forms are present in Mexico before the Classic era, but the points are differently chipped from those of Mayapan, and the rare published collections do not reveal types that are closely comparable. Much more pertinent are points in the collections from Veracruz published by Strebel (1885-89, vol. II, pl. XVII), and in that from Lancetilla, Honduras, illustrated by the Popenoes (1931, fig. 1). Neither of these collections, however, considered as an assemblage of forms, is identical to ours, and the historical implication that "Mexican" mercenaries brought the use of the arrow to Yucatan remains our best evidence for the origin of these small points.

At Chichen Itza, a few specimens identical to those of Mayapan probably belong to a very late period, when the city was reoccupied after its destruction. The more common projectile points from this site are considerably larger and of entirely different shapes. It seems more likely that they were dart points thrown with an atlatl. Such dart points are not represented at Mayapan. Apparently the war practices of the Toltec were not generally adopted by the Maya, and the founders of Mayapan lacked the tradition.

Unspecialized forms: 11. (Fig. 30,a.) Length: max. 5.4, min. 3.0, av. 4.3 cm. Width: max. 2.8, min. 1.3, av. 1.9 cm. Thickness: max. 0.9, min. 0.3, av. 0.6 cm. Wt.: max. 6.0, min. 1.5, av. 4.5 g.

These small points show little uniformity in form or technique. About half are made from flakes retouched only on the edges; others are chipped on both sides. It is by no means certain that all were intended to be points for arrows. Specimens such as the first and third, for example, may be tiny knives or scrapers. Most, however, are primarily points, and the variations are probably due to the idiosyncrasies of their makers. These points are all of poor chert and were probably homemade and not professionally manufactured, in contrast to points of obsidian, which may have been imported, and the side-notched forms of flint that imitate obsidian types. As a group, the unspecialized flint forms are broader and heavier than the side-notched types. Two specimens are surface finds; one was found on the floor of a house under roof debris; the remainder were sealed under floors of houses, two of them in tombs. It may be significant that none was found in constructions of the Main Group, which produced some of the side-notched forms, and none occurred in the earliest deposits.

Side-notched, straight base: 8; 7 complete, 1 fragment. (Fig. 30,b.) Length: max. 6.1, min. 2.2, av. 3.5 cm. Width: max. 1.5, min. 1.1, av. 1.35 cm. Thickness: max. 0.5, min. 0.2, av. 0.35 cm. Wt.: max. 3.5, min. under 1, av. 1.6 g.

Most of these arrow points are made from small, thin flakes retouched with very fine chipping along the edges from both sides. They therefore tend to be slightly curved longitudinally and smooth on the concave side. The convex side sometimes shows ridges or is flaked on the surface. Practically identical forms have been found at Lancetilla, Honduras (Popenoe and Popenoe, 1931), and others are shown in Strebel's collections from Veracruz (Strebel, 1885-89, vol. II, pl. XVII).

Four specimens come from below floors in house mounds. None is from a ceremonial structure.

Side-notched, rounded base: 8. (Fig. 30,c.) Length: max. 5.5, min. 3.0, av. 4.1 cm. Width: max. 2.2, min. 1.4, av. 1.75 cm. Thickness: max. 0.6, min. 0.3, av. 0.4 cm. Wt.: max. 3, min. under 1, av. 2.5 g.

Essentially, these are identical to the preceding group but have a rounded base and are more often flaked on both sides. Only one of these specimens was found under floors in a house structure. Others come from upper debris deposits, and four are associated with ceremonial structures. It is doubtful, however, that these facts are significant, since one arrow point of this form was found with three of unspecialized form in the same deposit under the floor of a house structure. The mere fact that these points are better made and therefore probably more highly valued might account for their presence in the ceremonial section and their rarity in sealed deposits. Two, however, are made of dark flint and are probably of foreign manufacture.

Taper-stemmed: 1. (Fig. 30,d.)

This fine little point is unique in the collection and may be pre-Mayapan Period in date, for it was found in one of the earliest deposits. Its very identification as an arrow point is uncertain because of its unusual shape.

Straight-stemmed: 1. (Fig. 30,e.) A roughly made piece with a blunt point at the bulb of percussion. Probably an aberrant piece of local manufacture.

Large point with long side notches: 1. (Fig. 30,f.)

Points of this type are fairly common at Chichen Itza, and may be designed for use with atlatl darts rather than with arrows. The deposit in which this point was found precedes the building of the Pyramid of Kukulcan and contains Black-on-cream pottery as well as an admixture of Medium Slate ware. It is difficult to say, therefore, whether it was in use at Mayapan or belongs to an earlier period.

Corner notched (expanding stem): 1. (Fig. 30,g.)

This point is made of dark flint and is probably not of local manufacture. Points of this general design are fairly common in Mexico, where they date back to pre-Classic times, and they probably have a wide distribution. Slightly larger corner-notched forms are characteristic also at Chichen Itza.

HATCHET-FORM FLINTS: 23, 19 complete, 4 fragments. (Fig. 31.)

This form has not been reported from other Middle American sites, although it figures prominently at Mayapan as a clearly defined type. It is possible that small celtlike flints may be confused sometimes with triangular points, but the blunt rounded form of the tip of most of these specimens shows that the occasional occurrence of a pointed end is incidental. The working edge appears to have been the sharp, slightly curved base, which often seems nicked by use. In general contour and size, these hatchet-form flints are remarkably like the small polished greenstone celts, even having a slight tendency toward asymmetry, but there is no polish on the blade and the roughened edges may argue a different use. Although there are two or three examples from Chichen Itza, they are probably of Mayapan period. None seems to occur at sites of Classic date in Yucatan, but there is a tool of similar form in fine opaque flint in a private collection reportedly from the Chetumal region (fig. 55,g), and a specimen identical to those of Mayapan comes from the east-coast site El Meco, Quintana Roo. It seems probable, therefore, that this form originates on the east coast and was brought to Mayapan with other evidence of influence from this area, probably after its founding, for by far the greatest number of hatchet-form flints were found in surface deposits, and the two that were sealed under floors were associated with wares that are late in the Mayapan sequence.

OVAL FLINTS (SCRAPERS?): 4. (Fig. 32,a-d.)

It is difficult to say whether the oval form represents a distinct type or is merely a variation of an amorphous class of flints chipped to convenient size. The flints are not strictly regular and are roughly flaked.

ASYMMETRICAL FLINTS: 5

Blunt: 2. (Fig. 32,e,f.) Amorphous flints with broken ends, but apparently shaped with approximation to blade forms.

Pointed: 3. (Fig. 32,g-i.) Although also roughly shaped, these three points seem to have a specialized form, with one straight and one curved side and a long sharp point. Possibly this is a variation of the scraper awl or graver, a tool more clearly represented in the following group.

SCRAPER-AWLS OR GRAVERS (?): 2. (Fig. 32,j,k.)

These are characterized by a small, narrow point and an expanding body with a retouched edge. One is chipped all over; the other is an irregularly shaped flake retouched on one edge and at the point. Similar, somewhat larger tools are reported from Uaxactun (Ricketson and Ricketson, 1937, pl. 55,b).

DRILLS (?): 5 fragments. (Fig. 32,m-p.)

These narrow, long tools, only slightly thinner than they are wide, may have been used for drilling, graving, or punching. On the smaller fragments, the edges of the flake scars appear to be smoothed down by use. The larger fragments narrow down at one end, as if designed for insertion into a hollow handle. No complete specimens were found.

NARROW POINTED BLADES: 3 fragments. (Fig. 32,q-s.)

Although no whole specimens have been found, the shape of these points suggests a specific type. The form was apparently a long, narrow blade with an acute asymmetrical point. One or both edges are sharp and finely chipped.

PICKS, CHISELS, OR GOUGES (?): 2 fragments. (Fig. 32,t,u.)

At Uaxactun, a similar form, somewhat more pointed, seems to have been used as a drill. Although these specimens are similarly thick, with triangular or diamond-shaped sections, the edges of the flake scars are quite sharp, and it seems more likely that they were picks or chisels. Each has a flake struck off at the termination, forming a chisel-like end, but it is not certain whether this is intentional or the result of breakage. Almost identical implements were found by Ricketson (1931, p. 6 and pl. 14) in Mound E, at Baking Pot, British Honduras.

UNIDENTIFIED CRUDE FORMS: 3. (Fig. 32,v-x.)

These crudely chipped tools approach in character those classed as large altered chips but retain less of the original form of the chip. The first is worked on both faces and may be classed as a rude axe, unique in this collection. The smaller two are humped in section, most of the flaking being on the convex side. All are surface finds and may be post-Mayapan in date.

FRAGMENTS OF IMPLEMENTS: 89

Standards of form and technique in the making of flint tools at Mayapan were not followed very strictly, and it is difficult to identify or sort fragments according to criteria suggested by whole specimens. Those that unmistakably belong to types described are included in the group designations. Two types already mentioned, the heavy picks or chisels and the narrow pointed blades, are represented clearly enough by fragments. The remaining pieces are mostly from various blades and points of ordinary workmanship and common flint, but some suggest that certain form varieties are not adequately covered by the whole specimens.

Broken crude tools: 6. Two of these may be ends of crude blades, one flaked on both sides, the other on one side only. Two are thick, blunt points worked from one side; and the remaining two are mid-portions of thick blades, one with parallel sides, the other with sides converging toward the ends. The thickness of these fragments is 1.5 to 2.0 cm, and the workmanship is very crude. In their individual variation they give no indication of representing an established type or technique and are most probably aberrant homemade implements of cultural significance only as they suggest the lack of fixed standard in the manufacture of the heavier tools.

Broken knives and points: 15. Four of the specimens are either sharp points or small pointed knives with rounded bases. The reconstructed length of the largest is about 9 cm. Four other blades, longer and tending to be oval, probably pointed originally, suggest a form that may be classed with long knives, but is symmetrical and rounded at the base. This form apparently is not represented in whole or nearly whole examples. The group includes other butt ends of knives and points, for the most part rather roughly flaked. Two are probably broken rejects, since they have a sharply projecting portion of cortex left, as if the tools were never finished.

Other broken forms: 5. Mostly small, roughly oval forms, not identified. Several may have been points, broken and later re-used for other purposes.

Butt ends of knives and points: 9. Judged from their size and form, most of these fragments are probably butt ends of long knives. Two are unusually neatly trimmed to a symmetrical, tapering, rounded end and may be from ceremonial blades. Others are only roughly shaped, and somewhat asymmetrical.

Butt ends or blunt points: 14. Many of these pieces, tapering at an acute angle, sometimes rounded at the end and sometimes coming to a blunt point, are certainly ends of "sacrificial" or of long knives. If the angle is more obtuse, we may be dealing with the butt end of a long knife or with the tip of a short knife. Two fragments are thick but sharply, though not symmetrically, pointed.

Mid-sections of blades and points: 14. These are about equally divided between parallel-sided pieces, pieces with gradually converging sides, and pieces with sides converging rapidly. Two very narrow fragments may belong to the narrow pointed forms in figure 32,q-s.

Points: 16. These, as may be expected, have great variety. Well shaped, sharp, symmetrical points occur more frequently than in the collection of whole specimens. Possibly there was a general falling-off of quality in flint-working technique, and more of the older specimens are represented by broken pieces. On the other hand, it may be that the thinner, more carefully flaked pieces are simply more fragile than the rougher tools and are more often found in fragments. There are four fairly sharp points with straight sides, three with gently curving sides, and two very well made acute-angled points. Two small points may come from arrowheads, and two from the narrow blades of figure 32,q-s.

Corner and side pieces: 5. These are too fragmentary to be identified. One rather crude three-cornered piece apparently fits none of the known forms.

Chipped flakes: 5. Two small flakes, one chipped on the edges to a point, the other blunt at one end, are more probably fragments of arrow points. Two others may be flaked off from larger tools, and one is a well shaped flake, 2.3 cm wide and 4 cm long, broken at one end, neatly rounded at the other, and flaked on one face.

CORE FRAGMENTS AND THICK CHIPS: 102. (Fig. 33.)

Large, crude chips of flint were often slightly altered or used as tools without being shaped to any definite form. It is very difficult to distinguish these from blanks and from rejects of the flintworker's shop. Two concentrations of such large flint chips were found at Mayapan. One collection of 36 pieces (Lot A-15) surprisingly comes from a tomb and suggests the breaking-up of a single large flint nodule, for all the pieces are of identical material. Twenty-two of them retain large spots of cortex. Although none of the fragments in this collection appears to have been deliberately chipped to form or retouched, a few have edges that may be worn with use. The other large collection, of 22 pieces, evidently fell from a roofed terrace behind a large residential house (Str. R-86). Some of the pieces had obviously been shaped; others were large, amorphous chips, all with large areas of cortex remaining. One would suspect these were blanks and rejects from a flintworker's shop located behind the house (CR 29, p. 308). The varieties of these and other singly found large chips and flakes are listed below:

Unaltered large chips: 63; 33 over 8 cm, 21 smaller. (Fig. 33,s-v.)

All these have been struck off cores, but whether for specific use or as blanks or rejects it is very difficult to say. Such fragments as that in figure 33,v, which has a heavy coating of limestone, may indicate merely the removal of the cortex in the preparation of a core. Other fragments, for instance 33,u, which have convenient points or edges, may have been used in the raw state, and on some of them wear on the edges has been noted. Fragments like those in figure 33,s,t may be rejects or pieces accidentally struck off. The collection in Lot A-15 seems to contain such a large proportion of amorphous fragments that one wonders whether a nodule had not deliberately been broken up by random blows.

Slightly altered or used chips: 17. (Fig. 33,o-r.)

When large chips show no definite form it is sometimes difficult to tell whether they have been altered. Some chips in this group show signs of having been used, and all are of a size and form convenient to handle. On some, it seems very probable that chips had been taken off deliberately to trim down projecting portions.

Altered or adapted large chips: 22. (Figs. 33,a-n; 34,a,b.)

These are not finished implements, but their forms are sufficiently regular to suggest deliberate shaping and at times even minor retouch of edges. Some of these pieces may be blanks for the manufacture of tools; others may have been shaped for immediate use. A number of distinct forms may be distinguished:

Five blade-like tools or blanks (fig. 33,a,b), with large areas of cortex. That in figure 33,b is exceptionally well formed, the other specimens being more like that shown in figure 33,a. All the specimens were found in one location, behind Str. R-86.

Six roughly oval forms, 2 of them with a distinct short point (fig. 33,c-g). It is very difficult to say which of these forms were produced deliberately, which were random pieces slightly trimmed. In some, at least, deliberate shaping seems indicated, and the pointed forms in figure 33,c,d would have made very convenient tools even in their crude state.

Two pointed pieces (fig. 33,h,i). The pointed chip in figure 33,h was undoubtedly touched up a little on one edge to be used as a tool. The fragment in i is badly flawed and may be a reject.

Seven roughly round forms (fig. 33,j-n). The uniform size of these approximately round pieces suggests a deliberate choice, and it is hard to see how some of them could have been formed by accident. The specimen in figure 33,j seems to have been deliberately shaped as a round scraper.

Two unaltered chip scrapers (fig. 34,a,b). These large, round flakes showing a sharp bulb of percussion on one face were apparently not retouched, but probably were struck off on purpose in this form. Their edges show irregular minute serrations, as if they had been used for scraping or cutting.

SMALL CHIPS AND FLAKES: 630

Unaltered: 481.

The frequency of flint chips in Mayapan collections indicates the local manufacture of tools. The material of the chips varies in quality and color, but only within the range represented in typical finished tools. The absence of good-quality opaque reddish, gray, and brown flints that occur in other collections from Yucatan, notably at Chichen Itza, is very conspicuous at Mayapan. One gets the impression that if large collections were available for comparison the Mayapan industry could be distinguished from others by the quality of its material as well as by a comparison of forms. Whether the differences in material are chiefly regional, or whether they include a time factor, is not at present clear. Evidently, however, the people of Mayapan did not receive much flint in trade or seek out the finer material, but manufactured their tools locally, probably getting their flint from near-by deposits.

Used or altered flakes: 149.

Among these we find five small unretouched flakes that are uniform in size and roughly oval, and have one sharp edge that in four of the flakes is minutely nicked. These may have been purposely struck off in this form to be used as scrapers (fig. 34,c). Four triangular forms are somewhat similar, and one of them is clearly retouched along one edge (fig. 34,e).

A unique specimen of approximately the same size and form (fig. 34,d) is made of fine white flint with a large spot of original cortex and is peculiar in having its surfaces and edges worn very smooth. Another unique specimen of fine opaque brown flint is probably a fragment of an imported tool, although it is essentially a flake with only minor retouch (fig. 34,f).

A number of amorphous flakes show secondary chipping on one or more faces. The flake in figure 34,g, for example, was chipped on the under side after removal. Those in figure 34,h show various amounts of retouch. The first specimen in the middle row, with a neatly rounded chipped edge, undoubtedly served as a scraper.

Chips of various forms were also often used without alteration. Some are illustrated in figure 34,i. At the upper right are two sharp points that could have served as gravers. Signs of use along the edges are apparent on these fragments. Almost any sharp edge may have been used, and it is not always possible to distinguish wear caused by use from the normal wear of discarded fragments. Whether the use of random flakes is more common at Mayapan than at other sites can be determined only by comparison of collections. Unfortunately, fragments of this sort are seldom preserved after a cursory examination in the field.

OBJECTS OF OBSIDIAN: 1955 (?)

(including about 1700 flake-blade fragments and 155 other fragments and rejects)

Obsidian was an imported commodity at Mayapan. It was brought to the city either in the form of prepared cores or, more probably, as raw material, since there are many amorphous flakes and pieces showing portions of weathered surface or cortex. The material is consistently translucent gray, often streaked with a darker tone that is seldom really black. Sometimes the clear portions have a tinge of warm brown, but red-streaked obsidian was not found, and in the whole collection there were only four pieces of the bottle-green obsidian that was so common in late periods in Mexico.

Obsidian was used at Mayapan mainly for the manufacture of flake blades and small scrapers. Arrowheads probably were also locally made from flake blades, but all larger chipped artifacts, with one notable exception, were made of flint, and the chipping of tools from large flakes of obsidian evidently was not the common practice here that it was in the highlands.

USED CORES: 19; 9 entire, 10 fragments. (Fig. 36,b.)

The manufacture of flake blades from obsidian cores has been discussed in various publications, notably in Kidder, Jennings, and Shook (1946, pp. 135-36), and the reader is referred to this description for an understanding of the basic technique. The blades and cores found at Mayapan reveal a technique very similar to that practiced in highland Guatemala, but minor peculiarities should be noted. All but one of the cores and all flake blades found at Mayapan show a flat, dull, evenly grained, pebbly striking platform, which in texture appears to correspond to what Barnes calls the "cortical" platform (Barnes, 1947, p. 627). On inspection this appears to be the natural weathered surface of the rock. The consistency of the use of such platforms at Mayapan, however, raises the question whether this texture could have been artificially reproduced. The cortical platform was used both in the highlands of Guatemala and in Mexico, extensively, but evidently not consistently as at Mayapan. W. R. Coe informs me that it has not been observed on flake blades from Piedras Negras, Guatemala.

One unusual core has a flat cortical surface at each end (fig. 36,b, third in top row). The two platforms may have been used alternatively, which would tend to minimize the curvature of the blades.

Most of the Mayapan cores also show small chipping on the periphery of the platform. This is not to provide footing for the point of the flaking implement, which was placed farther back on the platform, but was probably to trim off the slight overhang caused by the bulbs of percussion of previously removed flakes. The cores of Mayapan are roughly round in section and appear to be on the average smaller than those of the highlands. Most of the specimens found, however, were probably very near the end of their usefulness, and they are much shorter than the extant blades. Apparently they were drastically reduced in length as well as in perimeter, and among the fragments there are several blade-like pieces with the lower end of a core attached (fig. 36,c). Whether this occurred accidentally or was done purposely, the net result was to shorten the core and the subsequent blades that it could produce.

FLAKE BLADES: about 1730; 30 entire. (Figs. 35,i-k,n; 36,f,g.)

Normal blades: 16 entire. (Fig. 35,i,j.)

Obsidian blades are so fragile that they are preserved entire only under unusual circumstances. We cannot, therefore, estimate their average length accurately. The longest blade preserved measures 11.3 cm, and the shortest 3 cm, but some of the cores are even shorter. The widths of the whole specimens vary between 7 and 16 mm. At the upper end, all the blades preserve a small portion of the original surface of the flat, grainy, striking platform with small chipping along the edge. The blade edges tend to be wavy and irregular, but on unused specimens are razor-sharp. Usually there is a central channel or sometimes a single ridge. The lower end, when untrimmed, is either blunt or irregularly pointed, but on about half the specimens it is gently rounded off by fine chipping. One whole blade (fig. 35,j) preserves on its ridge a portion of the original cortex.

Lancet blades: 3 entire. (Fig. 35,k.)

Blades that come to a very long sharp point are on the average narrower than normal blades and have a single ridge. Their edges are very straight and show no signs of use. It is believed that such blades were used in blood-letting rites, and at Mayapan several were found in caches. Two effigy bowls buried under a shrine, Str. R-90, each contained a single blade with no other offerings. Most lancet blades are so thin and fragile that the survival of only three complete specimens is not surprising.

Retouched points: 3. (Fig. 35,n.)

These are short flakes retouched to a definite point. They differ in width and acuity of the point, and are probably atypical pieces. The smallest point shows extraordinarily fine chipping along the edges.

Blade with flat end. (Fig. 36,f.)

Both ends of this blade show a dull cortical surface. The proportion of butt to tip ends (549 to 338) among the fragments gives no indication that such pieces were very common.

Short irregular blades: 7. (Fig. 36,g.)

These may have been the first imperfect blades struck from a core before it was finally shaped. Their edges, however, show the same sort of wear as those of the regular knives, and they were evidently used as tools, even though they are imperfect.

Fragments: about 1700.

Blade fragments from such near-by sites as Santa Cruz were not separated from the Mayapan collection, and the count of fragmentary blades remains a rough estimate. It would hardly serve a useful purpose to make it more exact, for a number of pieces may have been broken in transit and some were discarded in the field. Without exception, all the butt ends observed have a dull, grainy surface on the portion of the striking platform remaining, which is uniformly flat. Slightly less than half of the lower ends of the Mayapan blades show some trimming, and only 10 out of a total of 338 tips are of the pointed lancet type. Since such points tend to break very easily, however, the original number of lancets relative to ordinary blades was probably much greater. Pieces broken at both ends were the most numerous, and occasionally the broken ends were trimmed and the blade, presumably, continued to be used.

The range of widths of the fragments is somewhat greater than that of whole specimens, but few exceeded 2 cm or were less than 0.5 cm wide. The modal width seems to be about 1.2 cm. Edges of the fragments often show heavy use, but deliberate notching was not observed, and there was no suggestion in the range of sizes that any were broken for being set in a wooden sword (macuahuitl) or for some similar purpose. Occasionally the fragments show longitudinal breaks, which appear to have been accidental.

Only three pieces in the entire collection of flake blades were of bottle-green obsidian. These were somewhat narrower and thicker than the average Mayapan blade and have straight parallel edges. Two of these blades come from disturbed graves, Lots A-191, C-20; the third is a surface find, Lot C-98.

ARROW POINTS: 17. (Fig. 35,b-g.)

Obsidian arrow points were usually made from flake blades, shaped with fine retouching on one or both sides. There are two basic forms at Mayapan and several odd examples. The side-notched form with a straight base occurs also in flint, but another form, notched on the base, is confined to obsidian.

All but three of the obsidian arrow points were found in Square Q near the ceremonial center. Of the three found elsewhere, one came from a large residence in Square R near the Main Group and another from a minor ritual center near Cenote X'Coton. Only one oddly shaped triangular specimen (fig. 35,d) was found in an outlying district, in Square Y. This concentration is not surprising when we consider that the more prosperous residences were in the central area and that men bearing arms were probably quartered near ceremonial centers. The flint arrow points are somewhat more widely dispersed, but most of those coming from remote house mounds are of unspecialized form and may have been used in hunting rather than in war.

Side-notched points with straight base: 7. (Fig. 35,c.)

Being made from flake blades, these points are ridged on one side and flat or concavoconvex on the other. The concave lengthwise curvature is usually reduced by chipping the point from both sides. The notches also are chipped from both sides, and on some points there is chipping below the notch that tends to round off the base. The fully finished round base seen on flint arrowheads, however, does not occur in obsidian.

Points very similar to these occur in the Voss collection from Veracruz, published by Strebel (1885-89), but the majority in that collection have a slightly concave base. Similar side-notched obsidian points from Lancetilla, Honduras (Popenoe and Popenoe, 1931), tend to have a more triangular shape. In Mexico, most arrow points are chipped on all the surface. Small side-notched forms, however, were found in Ticoman graves (Vaillant, 1931), and the Starr collection from Jalisco in the Field Museum of Natural History contains some flake points of this type (A. V. Kidder, personal notes). At present our knowledge of the distribution of arrowhead forms is much too sketchy to suggest the locality from which they may have been introduced into Yucatan.

Side-notched points with notched base: 4. (Fig. 35,e,f.)

A side-notched form with a concave base is very common in Mexico and in Veracruz, but distinct notches such as are found on the Mayapan specimens are not illustrated in the publications covered. At Mayapan there are two varieties of this form, one which is carefully chipped along all edges (fig. 35,e), and another, somewhat broader, which is chipped only on the point (fig. 35,f). Neither of these forms occurs in flint, and possibly the specimens were imported, though two were found under floors of houses, one with a child burial.

Arrow point with two side notches, concave base. (Fig. 35,g.)

The base of this point is similar to that of arrow points from the Valley of Mexico and Veracruz, but the double-notched form is unusual.

Triangular arrow point, concave base. (Fig. 35,d.)

This is an unusually well chipped specimen and is unique at Mayapan. It is the only arrow point not clearly manufactured from a flake blade and may, therefore, have been imported. It is also the only obsidian arrow point found in a district of small house mounds.

Arrow points of unspecialized form: 2. (Fig. 35,b.)

These specimens may simply be poorly made side-notched points. They are slightly constricted on the sides, but have no distinct notches.

Fragments: 2.

A side-notched point lacking a base, and a pointed tip.

SCRAPERS: 32. (Fig. 35,o-r.)

Essentially there are two types of scrapers: those made from core chips and those made from fragments of flake blades. The flake-blade ones are often amorphous, and their precise number is difficult to estimate, since any flake fragment touched up along the broken edge could have served as a scraper. Included in this count are only pieces that have definite form. Even so, their identification as "scrapers" is often doubtful. Some shaped pieces may have been used for inlay.

Core scrapers: 13. (Fig. 35,r.)

Nine of these can be classed as "thumbnail" scrapers. They are roughly round or oval, humped, with one surface unworked and sometimes showing a bulb of percussion. The three largest specimens shown in figure 35,r are less deliberately shaped, but their edges are retouched and appear to have been worn by use.

Flake scrapers: 19. (Fig. 35,o-q.)

Fragments of flake blades were modified in at least three different ways to produce small forms that may have been used as scrapers. Some were shaped into roughly oval elongated forms by retouch along the edges of the blades (fig. 35,o). Others were chipped on the transverse breaks (fig. 35,p). In the third variety, the butt end of the blade was used, and the edge is either transverse to the blade or curved at an oblique angle (fig. 35,q). Perhaps the term "scraper" is incorrect for these tiny tools; we actually have no knowledge of their purpose.

CHIPPED BLADES: 2. (Fig. 35,a.)

Only two completely chipped artifacts of obsidian have been found at Mayapan: a tiny fragment of a point, and a long leaf-shaped blade broken in several pieces (fig. 35,a). The blade is skillfully worked with shallow parallel flaking and fine retouch on the edges. It was found in the cache of large flint blades in Str. Q-84, and like them is comparable to Classic forms found in ceremonial caches in many sites of the Maya area. It is unique at Mayapan, but the fact that a cluster of small rejected flakes was found in the fill of the same construction suggests that the piece was made specifically for the cache in which it was placed.

MISCELLANEOUS FRAGMENTS AND REJECTS: 137

Core tips: 6. (Fig. 36,c.)

These have already been mentioned in connection with the preparation of cores. They were probably by-products of reshaping the core and show no evidences of having been used.

Unfinished chipped flake. (Fig. 35,h.)

This remarkably flat, thin chip was detached from the surface of a piece of obsidian and retains on one face a large spot of dull ground surface or cortex. The opposite face is ridged by concentric rings from a bulb of percussion. The chip was evidently broken as it was being shaped, for only part of it is retouched from both sides on the edge. The retouch stops at the break and is not continued on the second piece, which is slightly wider. This seems to have been an individual experiment that failed, for there are no comparable forms in the collection.

Large core flakes: 2. (Fig. 35,m.)

Neither of these flakes has the dull striking platform characteristic of flake blades. The flakes are formless and may have been merely by-products of shaping a raw piece of obsidian, but their edges are slightly worn and they were found together.

Large core fragments: 34. (Fig. 36,a.)

The two largest fragments in figure 36,a may be remnants of unusually large cores or blanks. Neither has a striking platform, though both show irregular flake scars. The next two pieces in this group are clearly remnants of cores with their broken edges worn by use. Others are amorphous pieces and thick flakes evidently discarded in the preparation of cores. A number retain spots of weathered surface. Among these is one thick flake of green obsidian, suggesting that green flake blades, although very rare, may have been locally made.

Thin flakes: 94. (Fig. 36,d,e.)

Among the thin amorphous flakes are several sharply pointed pieces, two of which were recovered from a disturbed tomb and may have served the same purpose as better-shaped lancet blades (fig. 36,d). Many amorphous chips are probably rejects, though some of them show signs of having been used. A sizable cluster of these, some of them minute, was found in the fill of Str. 84, in which also was found the one large chipped obsidian blade that has come from Mayapan. These small flakes may be the rejects from the manufacture of the blade. The remaining specimens are probably chance flakes struck in preparing cores from the original material. They vary in size and shape, and a number show spots of cortex.

UNCLASSIFIED RETOUCHED FRAGMENTS: 18

The flaking on these pieces does not identify them as artifact types. Some are retouched fragments of blades. Others may be rejected flakes or broken scrapers. It is perhaps worth noting that among them are no polished fragments that could indicate the existence of obsidian beads or of tubes such as have been found in the Sacrificial Cenote at Chichen Itza, and at Zaculeu in deposits of the Qankyak Phase (Woodbury and Trik, 1953, p. 241).

OBJECTS OF BONE: 202, and several otoliths

Under the general heading of bone artifacts are included tooth, antler, turtle carapace, and other organic remains, either worked or apparently utilized in some way. It is impossible to segregate from debris and midden material unworked fragments that may be parts of artifacts, but on the other hand even completely unworked pieces have occurred in contexts indicating that they were objects of use. Such pieces have been included as artifacts, though there are doubtless many of their kind that remain unrecognized as such in our bone collections.

Although bone is perishable, enough of it has remained to show that it furnished material for many common implements and that bone working was an important industry. Sometimes the species from which the bone derives can be determined or at least conjectured. A considerable variety of species is represented, of which deer bone is probably the most common. Human bone was worked, but presumably mainly for objects with ritual purpose.

Except for carvings, which show definite stylistic changes, the technique of working bone and the basic tools for which it was used appear to have changed very little in the span covered by the archaeology of Middle America. Minor variations can be observed in different published collections, but they have not been thoroughly studied, and so far have not yielded any conclusions of broad significance. So far as we know, the Mayapan collection, except in its style of carving, exhibits no striking differences from collections representing earlier periods in Yucatan.

MAMMAL-BONE POINTS: 46

Awls: 32; 11 complete, 21 fragments. (Fig. 37,a-f.)

Awls were usually made from metapodial bones of deer. Three distinct types can be distinguished: (1) Distal end of metapodial bone used in its full width and trimmed to a long point (fig. 37,a, 2 specimens). These awls have an almost triangular shape in elevation. In the unillustrated specimen, the shaping of the point begins with a straight crosscut, rather than the oblique cut of the specimen shown. From the cut down, a long oblique slice forms the point, which is smoothed and ground to a tip of circular section. (2) Distal end, split in half (fig. 37,b,c, 5 specimens). Two of these show a notch on one side, perhaps indicating that originally the awl was the full width of the bone, and afterward was split in two and reshaped, the original crosscut forming the notch (fig. 37,b). (3) Various bones with articulation removed (fig. 37,d-f, 4 specimens). These are formed either by a gradual oblique slice or with an initial crosscut. The bones used have not been identified.

The fragments include only points, since the butt ends are unworked and could not be segregated from other artifacts and unworked bones. Although not identified, most of the points are probably of deer bone and belong to the first two varieties described. Their number indicates that the awl was a common tool, no doubt of many practical uses.

Points made from strips of bone: 5; 1 complete, 4 fragments. (Fig. 37,g-j.)

Some of these may be awls, but the bluntness of most of the flat points suggests other uses. The sharpest is a short point with well rounded finished edges, trimmed at the end in trident form (fig. 37,g). The sides of the unusually long, flat point shown in fig. 37,j were left unfinished, and only the point is smoothed. The remaining three points are blunt and irregularly shaped (fig. 37,h,i).

Needles: 8, including 6 fragments. (Fig. 37,k,n.)

The needles are round or oval in section, tending to flatten toward the broader end, where there is usually a perforation formed by a slit worked from both sides. The slit is placed well down from the end, which may be round or pointed. The needles tend to curve toward the tip, and none of the typical ones are complete, the longest measuring 11.5 cm. Two atypical specimens are somewhat thicker than the average and are straight for their full length (fig. 37,n). One of these is perforated with a drilled hole; the other has no perforation and is round in section throughout.

Bodkin: 1. (Fig. 37,m.)

The bodkin is made like an ordinary needle, but is somewhat broader and flatter in section. It has a blunt, slightly rounded tip. The other end, near the slit, is sharply pointed.

SPINDLE WHORLS: 3. (Fig. 38,a.)

All are in the form of a truncated cone with a cylindrical axial hole about 7 mm in diameter. They are smooth on the top and base but rough on the sides, which are cut through a porous part of the bone. Two of the specimens come from graves, and the third from a sealed deposit in a central position of a house.

EARPLUG FLARES: 1 pair. (Fig. 38,b.)

The flares are cylindrical with a flange at one end and are identical except for a slight difference in height. The flange shows faint concentric striations on its face, and there is a narrow band of rough surface on the cylindrical stem. The accuracy of the workmanship suggests a drilling technique.

RINGS: 2. (Fig. 38,c,d.)

One is clearly a finger ring, though rather large in diameter. It is divided into three bands: two outer ones incised with oblique lines, and an inner band with a slightly depressed rough surface, as if it had held an inlay of some kind. The second specimen is a fragment of a ring about 2.1 cm in inner diameter and 2.5 cm in thickness.

RASPS: 4 fragments. (Fig. 40,k,m.)

It has been suggested that long bones with closely spaced horizontal cuts were used as sounding rasps. No complete specimens were found, but one specimen made from a human femur shows a broken head that was not removed, and it is very likely that the ends were not altered. The crosscuts begin about 6 cm below the joint and are spaced 4.5 mm apart. Another fragment of a human femur shows spacing about double this. A third specimen is made from the left tibia of a deer, and the cuts on its flattened surface are about 3.7 mm apart. The fourth bone, unidentified, has cuts spaced at 3.5 mm.

CUT SEGMENTS OF LONG BONE: 25

Ends of femora: 3. (Fig. 40,a,b.)

One specimen is a proximal end of a human femur; another, the distal end; and the third, the proximal end of the right femur of a puma (*Felis concolor*). All three are cut just under the joint by a V-shaped groove that does not quite penetrate the bone, the remaining section being broken. There is nothing to indicate whether these heads had a use in themselves or were rejected when the shaft was cut.

Perforated shafts: 4. (Fig. 40,h-j.)

Long bones cut to a length of about 8.5 cm and with three or four drilled perforations near one end may constitute a definite kind of artifact, though there seems to be no mention of other examples in the literature. Of the four specimens from Mayapan, two preserve the articular end of the bone and have three conical perforations just below the joint (fig. 40,i). Another is a tubular flaring bone with four drilled holes about 2.5 cm from one end (fig. 40,h). In the fourth specimen, which is broken, three conical perforations are placed very close to a square-cut end (fig. 40,j).

Shafts with oblique cuts: 4. (Fig. 40,c-f.) (See also Carved bones, below.)

Two heavy shafts (human femora?) have each a slanted crosscut and an obliquely cut end, in one bone apparently worn, in the other broken. The opposite ends of these shafts were probably cross cut. Vaillant (1935, fig. 26) reports similar objects which he calls ''gouge-shaped graining tools'' from El Arbolillo. Vertical and oblique cuts also form openings in two tubular animal bones, one of which may be that of a bird (fig. 40,f). The other (fig. 40,e), also a very light bone, may possibly be that of a monkey, but has not surely been identified.

Square-cut segments: 8. (Figs. 38,k,n; 40,g.)

These are of various shapes and sizes. One short piece (1.6 cm) of heavy bone is shaped to rectangular section (fig. 38,m) somewhat in the form of a bead. This and three longer sections of heavy bone show V-shaped cuts which do not penetrate quite through the bone, leaving a small section broken. Three segments are apparently of bird bone and are very thin walled. The longest of them, which is complete, measures 8.6 cm (fig. 40,g). One fragment of unidentified long bone, probably of a bird, showed four short transverse cuts, with intermediate scratches.

Bird-bone (?) beads: 6. (Fig. 38,j.)

Small segments, the longest 1.4 cm of thin tubular bone, oval in section and about 5.5 by 3.5 mm, were possibly used as beads. An assemblage of five was found in the burial shaft of Str. Q-95.

CARVED BONES: 3. (Figs. 39,a-c.)

An animal femur carved in the semblance of a jaguar (fig. 39,b) furnishes a good illustration of the art of minor carving at Mayapan. The head of the jaguar is carved in relief on the head of the femur with only a slight modification of its form. The body is represented on the shaft of the bone in light incision. Limbs are strongly outlined with a simple band, and pelt markings are shown by short, straight lines and irregular ovals. Two of these ovals on the back of the animal have the semblance of glyphs, but are not characteristic as signs. Lower down on the shaft, beneath the jaguar, are three plain bands followed by a braid motif with gouged-out background. The bands are interrupted by a cut forming a longitudinal opening in the bone. The band-and-braid motif is seen again on a fragment of carving in figure 39,a. This is made on a very thin cylinder of bone, which was about 2 or 2.5 cm in diameter when complete. Here, above the band-and-braid motif is another band composed of a step-and-scroll design alternating with a scroll and plume. The step-and-scroll is the same motif that appears on an inscribed disc of shell in figure 43,a. The third specimen (fig. 39,c) is another fragment of thin bone showing a very simple linear decoration of bands and cross hatching.

CUT AND PERFORATED HUMAN SKULL

This specimen did not come out of the Institution's recent excavations, but is listed in an earlier catalog. Unfortunately its exact location and the year of its accession are not given. The skull had been cut vertically about 3.3 cm back from the forehead, and the preserved portion includes the right half of the forehead, both brow ridges, orbits, and part of the left zygomatic arch. Above the right orbital ridge near the vertical cut is a drilled perforation, which was probably balanced on the left by another perforation in a part of the skull now broken away. There is a similar perforation in the left zygomatic bone which is still preserved. The skull is particularly interesting because Landa associates specifically with the Cocom the practice of cutting away the frontal portion of the skull and using the part removed to build up a portrait mask of the deceased (Tozzer, 1941, p. 131). His information is confirmed in part by this find. The practice, however, is probably an old one among the Maya and may not have been peculiar to the Cocom, for burial E12 at Uaxactun showed the frontal portion of the skull removed (A. L. Smith, 1950, p. 89; and Ricketson and Ricketson, 1937, p. 145).

MISCELLANEOUS BONE OBJECTS: 13

Rib of Manati: 1. (Fig. 40,o.) Worked at one end, leaving knob; broken at the other. Surface blackened by fire. A similar form but of hollow bone was found in a San José IV deposit by J. E. Thompson (1939, pl. 29,a,1).

Ungual phalanx of deer: 1 pair. (Fig. 38,h.) Found on floor of kitchen, Str. R-86a. Unworkec Other specimens occur in bone collections.

Phalanx of deer, with perforation; Lot A-19.

Triangular piece of cut bone: 1. (Fig. 38,g.) May be short awl or punch; with dull point. Sliced from piece of long bone.

Portion of awl (?). Broken piece, blackened by fire; Lot C-64.

Flat, shaped piece of bone with ridge. (Fig. 38,i.)

Shaped piece of bone, triangular in section. (Fig. 38,f.) From burial.

Shaped piece of bone, rectangular in section. (Fig. 38,e.)

Sliver of long bone, cut flat at end. (Fig. 40,q.)

Posterior tip of right ischium of deer, with cut. (Fig. 40,n.)

Right tibia of deer, with longitudinal grooves, probably incompletely cut. (Fig. 40,*p*.)

Unidentified animal bone with crosscut groove; Lot A-130.

PERFORATED TEETH: 53

Human: 38. (Fig. 41,*a*.)

One assemblage of 30 perforated human teeth was found under a bench of a house, associated with articles of shell, bone, flint, and other materials, including a perforated puma tooth which may have been part of the same set. The human teeth included 9 molars, 9 bicuspids, 4 canines (?), and 8 incisors. All are pierced by a biconical drilled hole through the root, and two specimens have two holes. In the molars, only one branch of the root was left for perforation. There are four shovel-shaped incisors in this collection, and all are heavily worn on the edge. No incrustations were noted, but one incisor appears to have been cut or filed.

Another set of human teeth was found in a deposit between the floors of Str. R-87. This included two molars, one premolar, and one bicuspid, cut and perforated in the manner of the previous set. Among the remaining single specimens are two incisors and two molars, one of the molars having its unpierced root intact.

Animal: 15. (Fig. 41,*b*-*i*.)

Four of these specimens are probably canine teeth of the jaguar (*Felis onca*) (fig. 41,*d*,*e*). Three are pierced by a biconical hole near the tip of the root. The fourth specimen is smaller than the others and uncertainly identified as belonging to the jaguar. It shows two slit cuts which originally probably pierced the root (fig. 41,*f*). Four other specimens appear to be of the puma (*Felis concolor*) (fig. 41,*g*), though only one was identified with certainty. The perforation of that specimen is cylindrical. Four specimens are tusks of the peccary (fig. 41,*b*,*c*); three of these are from the species *Tayassu pecari*. The fourth is from *Pecari tajacu*; its perforation is cylindrical, and it has flattened worn or cut surfaces both on the outer and on the inner curves of the tooth. There are in addition two dog canines with cylindrical perforations in the root (fig. 41,*h*) and one broken molar of the tapir (*Tapirus bairdii*) with a drilled hole in the one remaining root (fig. 41,*i*).

ANTLER TOOLS AND FRAGMENTS: 21

Plain points: 7. (Fig. 40,*r*-*t*.) Antler was used by many primitive peoples in chipping flint and obsidian tools. Very likely it was so used at Mayapan without deliberate shaping. The points are not sharp, but very smooth, and some may be artificially ground down. The burr is not removed except possibly near the tip.

Carved point. (Fig. 39,*d*.) One pronged antler is carved in the semblance of a figure squatting on a pedestal. The head of the figure is missing, and whether it was animal or human or a combination of the two is not clear. The hands and arms carved on the prong, which extends in front of the figure, appear to be human, but the body has animal features, notably the indication of a pelt by lightly incised lines. The pedestal is composed of two-member moldings with a band between decorated with two incised step frets. The pattern of this carving, the utilization of the natural form of the medium, its combination of relief and incision, and the use of bands below the figure link it very closely with the jaguar carving in figure 39,*b*.

Spatulate end. (Fig. 40,u.) A fragment of antler ground down to a flat, rounded end, found in an early Mayapan deposit.

Blunt sections: 8. (Fig. 40,v-x.) Four of these sections were found in one location under a bench of a house. The burr had been removed, and some specimens are hollow at one end. It is not certain, however, that the hollows were deliberately formed, for they may be the result of mere erosion of the core. If they were man made, they could have served for the insertion of a pointed tool. The removal of the burr from all specimens strongly suggests the use of the antler sections as handles.

Miscellaneous fragments: 4.

STING RAY SPINES: 16. (Fig. 41,n-r.)

These thin, serrated blades, extremely sharp at the tip, have been found in many Maya sites. They are very fragile and are seldom found entire, but plain and carved fragments occur in almost all comprehensive collections. They are most often found in tombs, particularly near the pelvis of a skeleton. Landa mentions them in connection with the practice of blood sacrifice. It is less generally known that they were occasionally made into implements, but a small number of bone tools from our collection strongly indicate that they were. When trimmed of their barbs, they are difficult to distinguish from other kinds of bone, but the specimens described have a characteristic form and texture that almost surely identify the material.

Spines trimmed at end only: 10 fragments. (Fig. 41,n.)

Four of these fragments were found in graves and three in caches, attesting their ritual function. Two particularly large and well preserved specimens come from a burial in a house, Str. P-14a. The longest spine, when complete, must have measured at least 19.3 cm. The upper barbs had been trimmed off, leaving an unserrated end of about 5.5 cm. Other blunt ends show various degrees of trimming, one being definitely flattened and rounded. Apparently the tips were always left intact.

Fragments with barbs removed: 3. (Fig. 41,r.)

One of these specimens is badly weathered and may have lost its barbs through wear, but this seems unlikely in view of the fact that two others are certainly deliberately trimmed and the only doubt arises in the identification of the material. One of these fragments has a transversely cut end; another has an end that is tapered and rounded.

Perforated objects: 3. (Fig. 41,o-q.)

The artifacts in figure 41,o-q, all biconically drilled and trimmed at the ends, are almost certainly of sting ray spine although the barbs have been removed and in at least two of the specimens the characteristic central groove was eliminated. Very likely these forms were normally made of wood or other perishable material and only occasionally executed in bone, the spine of the sting ray offering a form naturally suited to the purpose.

OTHER FISH BONES: 11 and otoliths.

Aside from the sting ray spines no fish bones were observed to be artificially cut. The occurrence of the following in isolation from other skeletal remains, however, leads us to conclude that they had specific uses.

Shark teeth: 5. (Fig. 41,k,m.) Two species, the tiger or leopard shark (Galeocerdo cuvier) and the man-eating white shark (Carcharodon carcharius), have been identified, though others are represented. Two teeth of Galeocerdo cuvier were found together on the floor of a house, possibly in association with ceremonial vessels. The others occur singly and with no specific association.

Fish barbules: 5. (Fig. 41,j.) Three barbules of catfish were recovered from a burial cist in Str. H-18. We have no evidence of their use, but these small pointed bones could very well have served as pins in a loose fabric. Although few were found, their fragility and perishable nature may well account for their rarity, even if they were in common use. Of the two remaining examples, one is barbed on the edges and may belong to some other, unidentified species. All were found in situ below floors.

Unidentified barbed bone: 4.1 cm long, 6 by 2.5 mm in section, with fine barbs on edges. Fragment showing distinct bend.

Otoliths: several. Otoliths were seldom listed in our excavations, and there is no definite indication of their use. Whether they occur in cache deposits or come from midden material has not been ascertained. Lots A-233(4), C-106(1).

TURTLE SHELLS: 2

One almost complete shell, including the carapace and the posterior half of the plastron (fig. 41,s). There are two conical drilled holes in the center axis. One, near the front edge of the carapace, is drilled from the under side; the other, near the cut of the plastron, is drilled also from the under or outer side. Somewhat lower down on the carapace and at the very edge are two conically drilled pits. Probably perforations were intended here, but one is broken out and the other was never completed. The species is Terrapene mexicana, a common box turtle.

The other specimen is a piece of plastron of Pseudemys scripta, with an edge irregularly cut. Pieces of plastron with no trace of workmanship have been encountered elsewhere in our excavations. Aside from these two worked examples, however, no artifact of turtle- or tortoise-shell has been recognized.

OBJECTS OF SHELL: 649

(including unworked marine shells and fragments)

None of the shells found at Mayapan occurs in such numbers or under such conditions as to indicate that shellfish were a common article of diet, though some of the larger molluscs, such as Strombus gigas Linné, were doubtless eaten occasionally, as they are today. Shells were valued principally as ornaments, and many varieties were in use. So far as is known, however, only three genera were habitually altered into special articles of adornment. Chief of these was Strombus gigas Linné, which is large enough to produce a variety of forms. Another was Spondylus of various species, valued evidently for its color and commonly used for the manufacture of beads. The third genus, Oliva, was fashioned into so-called "tinklers" and other small ornaments. Other varieties were merely pierced to be strung or fastened to fabrics. Of these, only small Marginella and Anomia have been found in assemblages of any size. Most pierced shells were found singly, and many show no signs of having been worked.

CARVED SERPENT HEAD: 1. (Fig. 42,a.)

This piece is described in CR 33, fig. 2,h and p. 427, as bone, but is more probably of shell. The design is cut out and finished with incising, a technique characteristic of the shell-working industry during the Classic and early post-Classic periods. The style is that of Toltec Chichen Itza, and the piece may be an heirloom dating from that period or from the early days of Mayapan.

BEADS: 92. (Fig. 42,b-e.)

Only three assemblages of beads have been found at Mayapan. One included 16 small beads, all but 2 of them discoidal, but of various sizes and colors, apparently interspersed with 6 pendants (fig. 42,h). Another, found in a burial shaft in Str. Q-95, consists of 14 discoidal beads, the largest 6.5 mm in diameter. Since the shaft contained many burials it is not certain that the beads are from a single assemblage, but they are fairly well matched in size and form, though the material is of indifferent quality and the forms are not accurately circular. The third assemblage, of only 3 beads, formed part of an anklet of a buried child, the beads being set singly between copper bells. The best assemblages were doubtless removed from looted caches and graves, and the small samples we have may only poorly represent the extent of the use of such beads. Landa mentions that "beads of certain red shells" were used for money (Tozzer, 1941, p. 96), and they must have had readily convertible value. The "red beads" reported were very likely made from some species of Spondylus. At Mayapan, the color of shell beads ranges from white, through faintly rose-tinged, to lustrous orange-vermilion, often mixed with white. The beads match the color of some of the Spondylus shells found entire, but there were no fragments to suggest their manufacture, and it seems probable that most of them were made in coastal towns from some larger species than are represented at Mayapan. Some of the white beads may have been made locally from Strombus gigas, which we know was commonly worked at Mayapan, but positive evidence of this is lacking.

Discoidal beads: 68; 47 white, 19 pink, 2 orange. (Fig. 42,b.) Diam. 4 to 14 mm; ht. 1 to 6 mm.

These beads are never perfectly circular, some being squarish, others slightly oval. The flat surfaces are often not exactly parallel, and many beads are rounded. Cylindrical and biconical perforations are equally frequent and range from 1 to 4 mm in diameter. Five beads, evidently cut from portions of shell with a sharp inner curvature, are cuplike in form. Pinkish and orange beads tend to have higher luster than white ones, but most of the specimens either have lost their luster or were never highly polished. The three assemblages found contain mostly small discoidal white beads, probably the most common variety. Orange shell, valued for its color, was rarely made into discoidal forms, and the two orange specimens of this form are very tiny.

Beads perforated longitudinally: 17; 3 white, 7 pink, 4 orange, 3 burned. (Fig. 42,*c*.)
Length: 4.5 to 22 mm. Width: 4 to 17 mm. Thickness: 4 to 12 mm.

The proportion of colored beads is considerably higher in this group than among disclike forms, probably because the surface is better displayed in a long bead. The forms vary, but flattened barrel shapes appear to be more common than those approaching the cylindrical or the prismatic. Perforations are either cylindrical or biconical. One specimen has a small conical hole, meeting the main perforation from the side.

Beads with perforations on back: 3; 2 white, 1 orange and white. (Fig. 42,*d*.)

The two rectangular white beads are a pair, recovered from a burial cist. The biconical perforations are aligned on the long axis and run from the ends to the back, obliquely to the face of the bead. In the orange and white bead, the alignment is oblique to the axis and one perforation emerges at the corner of the bead.

Odd forms: 4. (Fig. 42,*e*.)

Miscellaneous beads of odd form include: 1 white bead shaped like a section of a torus with a cylindrical perforation 5 mm in diameter; one bead of deep red shell or calcareous stone, perforated with two cylindrical holes at right angles; a similar but less regularly shaped bead with a conical transverse perforation; and an irregularly shaped bead pierced near one edge, which might possibly be classed as a pendant.

OTHER PERFORATED FORMS: 21 (see also *Spondylus*, shaped and drilled).

Triangular pendants: 8 standard, 2 variants. (Fig. 42,*q*.)

The triangular pendant seems to be a standard form, derived from cutting a section from a bivalve shell, its edge forming the base of the triangle. The triangle therefore increases in thickness toward the apex, where it is pierced by a drilled hole parallel to the base. Pendants of this form occur in the Strebel collection from Cerro Montoso (Strebel, 1885-89, vol. 1, pl. 14, no. 11) and are reported from Cholula. They occur also at Zaculeu, where their chronological position is uncertain, but it is suggested that they belong with the Qankyak Phase (Woodbury and Trik, p. 272). Four specimens found at Mayapan in a single assemblage of beads are decorated with incised lines and pits in roughly matching design (fig. 42,*h*). Another is carved in semblance of a bead by a central drilled pit and lines cutting the angles of the triangle (fig. 42,*q*, first specimen, lower row). One specimen retains some of its original red surface and is almost certainly made from *Spondylus* shell. Another, however, may be an imitation made of conch and originally painted an orange-red. An aberrant specimen is made of orange shell and is thicker at the base than at the top. Its tip is broken, but it had a large irregular perforation perpendicular to the face (fig. 42,*q*, last specimen. Another aberrant specimen is unpierced but is very similar to the standard forms.

Other pendants: 3.

Two of these are narrow slivers of the edge of bivalve shells, perforated, like the triangular pendants, parallel to the edge of the shell (fig. 42,*h*). They form part of the assemblage including triangular pendants mentioned above. The third specimen is a small rectangle with two perforations near one end at the back corners (fig. 42,*f*).

Grooved ornaments: 3; 2 whole, 1 fragment. (Fig. 42,*i*-*k*.)

One whole round specimen and one fragment are decorated by concentric drilled grooves. The complete piece has two conical perforations. The other complete piece is hexagonal, with a pit in the center, a sharp concentric groove, and two drilled suspension holes (fig. 42,*k*).

Miscellaneous drilled forms: 5; 4 complete, 1 fragment. (Fig. 42,*m*-*p*.)

These forms are sufficiently described in the figure legends. Although usually classed as ornamental, such forms may also have had utilitarian functions. The device in fig. 42,*m* can well be imagined as some sort of buckle. Figure 42,*n* and *o* may have served to fasten a cord or even for some such purpose as joining two fine brushes or gravers in ruling parallel lines, for example on bark beaters. Many shell forms remain enigmatic in their function, and, although ornamental uses of shell were doubtless predominant, it is well to keep alternative possibilities in mind. The unillustrated fragment is a small amorphous piece of nacreous shell with a broken perforation 4 mm in diameter.

SMALL PEGS OR NOSE PLUGS: 2. (Fig. 42,*g*.)

These are of white shell, very probably *Strombus gigas* Linné. They are round in section with a small rectangular knob at one end. The surmise that they were nose plugs is based on nothing more than their general size and shape. One specimen was found on the floor of a kitchen which also contained many vessels broken *in situ*; the other was found in platform fill and may have come from a cache.

SMALL DISCS AND RINGS: 9. (Fig. 42,*r*.)

Plain discs: 2. Judging from the markings on the back of these discs, they were made from conch shell. The forms are fairly regular, but are evidently cut, not drilled.

Discs with drilled hole or pit: 5. These are also cut from white shell, but whether *Strombus gigas* or some other variety it is impossible to tell. Four are perforated by drilled holes. The fifth has a drilled pit that does not pierce the disc.

Rings: 2. The hole in shell rings is larger, and is cut out and not drilled. The form tends to be less regular. The larger specimen is decorated by four scraped bands diverging from the center. This form resembles the buckle-like ornament in figure 42,*m* but has no holes for attachment.

CURVED BAND FRAGMENTS: 9

''Horse-Collars'' (?): 7. (Fig. 42,*s*,*t*,*w*,*x*.)

Bands of uneven curvature, made of heavy shell, probably *Strombus*, and varying from 1.5 to 3.2 cm in width may be fragments of ornaments analogous to the ''horse-collars'' of Kaminaljuyu

(Kidder, Jennings, and Shook, 1946, fig. 162,e,h). They vary in section but are either rounded or beveled on the inner edge and do not have a ledge, like the Kaminaljuyu specimens. The piece in figure 42,t, which is banded by oblique surfaces, was evidently perforated after being broken to form a small plaque that could be attached to a fabric. Another fragment, figure 42,s, retains part of a band of hieroglyphs lightly scratched or incised on the surface. The glyphs are enclosed in oval cartouches, and the coefficients 1, 2, 3, and part of 4 are rendered by small drilled pits. The signs are unfamiliar forms, though they bear a general resemblance to Maya day glyphs. In view of the variant day forms that occur even in such classic inscriptions as on the inscribed shells from Piedras Negras, the surmise that the glyphs on shell from Mayapan are variants of Maya day forms could be justified, though at present little is known of minor calligraphic styles that may exist elsewhere. The first glyph, possibly representing a human mouth in profile, might conceivably suggest the day sign ''Ik,'' the word having some connotation of breath or spirit as well as of wind. The following two may be Akbal and Kan, but although the latter has some resemblance to the Maya form of the day, the former can be read as ''Akbal'' only if it is turned upside down. On the whole the analogy seems altogether too weak to maintain this interpretation against others that could be proposed.

Narrow bands: 2. (Fig. 42,u,v.)

The two narrow specimens (1 to 1.2 cm), unlike the ''horse-collars,'' preserve a more or less constant width. This may be, however, only because the sections we have are small. One of the specimens is flat in section; the other is made from the shoulder of a conch and shows a characteristic ridge on the under side.

LARGE DISCS AND OVALS: 8. (Fig. 43,a.)

Plain: 3; 1 irregularly shaped oval cut from the shoulder of a conch shell; 2 fragments with curved edge and no visible perforation.

Perforated: 4; 1 irregular piece of conch about 6 by 6 cm, with drilled hole, 2-mm diameter, near one edge; 1 complete disc of conch with 2 perforations; 2 fragments with rounded edge, one with single perforation near edge, the other with 2 perforations.

Incised: 1 fragment. This disc is scratched with a simple design arranged in concentric bands on the concave surface. The technique and the forms are primitive, except the form contained in the center band, which probably originates on decoration of X Fine Orange type and is related to the ''cloud band'' motifs of post-Classic Veracruz, Xochicalco, and Chichen Itza.

INLAY FORMS (?): 19. (Fig. 43,b-d.)

Assemblages: 2; 9 and 5 pieces, respectively. (Fig. 43,b,c.)

Scattered among fragments of incense burners and other vessels that were deposited in an open tomb in Str. R-86 (CR 29, p. 307) were 7 quadrangular pieces of conch shell about 1.5 by 2.8 cm and 2 others with one rounded end (fig. 43,b). The forms are not regular, but the quadrangles can be roughly paired in size, the odd one being less well finished than the others, which are neatly cut and ground or scraped down on the surface, though not so as to obliterate completely the structural markings of the shell. These shell pieces were probably used for inlay on some more perishable material.

The other collection, of 5 pieces (fig. 43,*c*), comes from the debris of the main temple of Mayapan, and may be part of an originally larger assemblage. Three of the pieces are nearly rectangular and much more accurately cut and finished than those described above. Two are of white shell; the third is tinged with pink. Of the two odd fragments, one is pointed and the other is a thick, curved piece that appears to be partly cut through and partly broken at the top. There are several such pointed pieces in collections from Chichen Itza (fig. 53,*u*,*v*), and it may represent a special form, fortuitously associated with the inlay pieces.

Odd pieces: 5. (Fig. 43,*d*.)

Pieces found singly include one long rectangle similar to those just described, one rectangle 2.2 by 1.5 cm, one straight-edged piece with curved ends, and two odd curved forms.

CONCH TRUMPETS: 22. (Fig. 47,*a*-*m*.)

Large: 13; 4 complete, 9 spires.

Trumpets made by cutting the tip of the spire of a large conch shell, sometimes with minor trimming of the opposite end, are widely distributed in Middle America (see Kidder, Jennings, and Shook, 1946, p. 147). They are used even today, not only by the primitive Lacandon but also by more civilized hunters and boatmen, for making signal calls. Their lugubrious sound is very penetrating and can be heard from afar. Historically they are known to have been used in warfare, and Landa (Tozzer, 1941) classes them with musical instruments used in dance accompaniment. In the past as today, however, they were probably used mainly for signal calls, and for sound effects rather than as tonal instruments.

The species most commonly found at Mayapan is *Strombus gigas* Linné, of which we have 3 complete specimens (fig. 47,*a*-*c*) and 9 cut spires (fig. 47,*d*-*f*). The cuts are not clean, and the spires may actually have been broken off, though probably their condition is due to subsequent wear. One very large specimen was of another species, probably *Fasciolaria gigantea* (fig. 47,*g*). The end of this specimen, however, is not trimmed, and its use as a trumpet is, therefore, uncertain. The trumpet seems to be the only recognized utilitarian artifact at Mayapan that is made of shell, but unworked shells undoubtedly had many practical uses.

Small: 9; 7 of *Strombus gigas* Linné, 2 *Conus* sp. (Fig. 47,*i*-*m*.)

Specimens under 10 cm long are not usually classed as trumpets, but there are 9 at Mayapan identically treated and it is probable that they were used in the same way, although possibly on different occasions. Judging from the sizes of the spires of *Strombus gigas* found, there is no sharp break in size between the large and the smaller specimens. There may be more reason to question the identity of the two *Conus* shells as sound-making instruments. None found, however, is perforated or altered in any way to suggest its being strung or attached as an ornament.

SLIGHTLY ALTERED AND UNALTERED SHELLS: 459

Strombus gigas Linné: 72 fragments. (Fig. 43,*e*-*g*.)

In addition to its use for trumpets, this species undoubtedly furnished the material for many of the artifacts described above. Although only a few specimens were actually identified, it is probable that most of the fragments in this collection are of the same variety. They are chiefly of interest because they indicate a uniform, traditional manner of cutting the shell, presumably for the manufacture of various articles. For example, among the end tips (fig. 43,g) there are several examples showing two sawed cuts at right angles, one parallel and one transverse to the axis. The cuts do not entirely penetrate the shell, and the inner edge is broken. Two more cuts at right angles further reduce the piece to a triangular point (fig. 43,g, last specimen). Figure 43,f illustrates the manner of cutting and treating the surface of the shell. More or less rectangular pieces were cut from the shoulder (fig. 43,e) and apparently left in this form, though whether for use as implements or for purposes of inlay is not certain. About a third of the fragments found had clearly been cut, though it was seldom possible to sort out the rejects from fragments of artifacts.

Spondylus: 16, whole and broken. (Fig. 44,a.)

Next to Strombus gigas Linné, Spondylus was the shell most commonly used for the production of artifacts. It is a fairly thick, strong shell and was valued for its surface color, which varies from mauve to brilliant orange. Many of the beads were probably made of Spondylus, but the slightly altered specimens found at Mayapan seem too small for this purpose. Seven specimens in the collection were trimmed and perforated with two holes. The surfaces and edges of these shells were much worn or scraped. In most the hinge is trimmed, and subsequent wear makes it difficult to tell whether the edges were likewise rounded. For five other specimens, the shaping of the pieces is abundantly clear. Three are roughly oval, and two are quadrangular. All these shells have two conical drilled suspension holes near the hinge 1 to 3 mm in effective diameter and 1 to 2.3 cm apart on center. In addition to these specimens, there is one small oval piece similarly perforated, one apparently triangular piece with three holes, one unperforated rectangular piece, and one irregular disc with three holes, a large one near the center and two smaller ones near the edge. Two of the 16 remaining specimens are whole shells, and others are fragments with no sign of having been worked. Only two tiny fragments are spiked.

Oliva: 73 entire. (Fig. 45.)

As far as we know, only one species, Oliva reticularis, is represented at Mayapan, but only a few specimens were examined with a view to identification. Faint yellowish markings can be seen on some, but for the most part the original color is effaced and the shells appear uniformly white. In transverse dimension they range from 1 to 2.4 cm and in length from 2.3 to about 6 cm when complete. All 6 of the unaltered specimens found (fig. 45,b, first row) were smaller than the average. Of average size were 20 with only the spire cut off (fig. 45,b, second row). Eleven of these were found in surface excavations of the main temple of Kukulcan (Str. Q-162), where they could have come from a disturbed cache. Eight specimens were cut transversely below the spire (fig. 45,b, last row). Since no tips were found, we assume that only the lower part of the shell was used. The lack of tips may also argue that the shells were already worked when brought to the city, but the spires are small and may have been overlooked in excavations. One specimen has two transverse cuts, leaving only the middle portion of the shell (last specimen, fig. 45,b).

The usual way of working an olive shell was to cut it transversely and to saw a slit near the base to form a perforation (fig. 45,c, first row). Such shells are usually called "tinklers" on the assumption that they were strung together and were intended to make a tinkling noise. None of the Mayapan specimens, however, were found in assemblage. Here they occur singly and were more probably either pendants worn with some ritual significance or perhaps the sort of beads that were suspended in front of an infant's eyes to produce a slight cast that was much admired, according to Landa. Though found in all locations, more "tinklers" come from early sealed deposits than one would expect. A number were found in caches and tombs with no association with other beads.

There are 28 perforated specimens and 3 fragments. Nineteen, including the 3 fragments, had the normal slit perforation near the base. One specimen was found in which the slit did not penetrate the base. Another has a wide slit forming an almost rectangular hole. Other odd specimens (fig. 45,c, second and last rows) include a fragment cut transversely, but with the slit perforation on the under side of the shell; another with two slit perforations, one near the spire end; 2 shells with spires intact, one of which has a normal slit perforation and the other a longitudinal sawed slit. There is also another specimen with a longitudinal slit but with a cut spire. Finally there are 4 specimens with drilled perforations: 2 with the spire cut and holes drilled on the shoulder, and 2 cut below the spire and the perforations near the base.

An entirely different way of using an olive shell is represented by specimens cut longitudinally. There are 2 with cut spire and a superficial longitudinal cut that makes a jagged hole in one side (fig. 45,d). Three specimens have two parallel cuts exposing the interior of the shell (fig. 45,e). One end piece was cut transversely and longitudinally (fig. 45,f). Three specimens are cut in half longitudinally and have a large perforation in the center, and 3 others, perforated in the same way, are cut in the form of ovals (fig. 45,g,h). One cannot but suspect that these pieces were used for inlay to represent eyes. Although there are three specimens of each kind, two of each kind were found in one location, in the debris of Str. Q-82. Unfortunately there was no indication of their association with a figure.

The slit usually made near the base of the shell probably suggested the motif of the single carved specimen recovered (fig. 45,a). Teeth have been indicated around the slit, another horizontal slit was made for the nose, and possibly there had been an area cut out here, now obscured by a break. The eyes are cut round holes, with incised lines around them. The base of the shell is cut, and on the back are two long parallel V-sectioned cuts which once formed slit perforations but are now broken by a jagged hole. Hardly an inspired bit of carving, the skull representation is nevertheless made with an admirable economy of line and cleverly adapted to the given form.

In addition to the specimens described, there are 11 miscellaneous fragments of indeterminate forms.

Marginella: 24 (count probably incomplete). (Fig. 44,c,d.)

Of the two varieties of Marginella identified at Mayapan, the larger is Marginella labiata Valenciennes. We have recorded 8 specimens, all but 1 of which are perforated in some way. The perforations, however, are not uniform. There is an example of a slit near the base, several of apparently drilled holes in different locations on the shell, 2 with jagged holes that may have originated from a perforation, and 2 with cut spires.

The small variety, identified as Marginella apicina Menke (fig. 44,d), is much more numerous. Unfortunately, many of these tiny shells may have been discarded in excavations under the misconception that they were intrusive terrestrial species. Many of them were unpierced. One assemblage recovered, however, included 9 pierced shells found with the burial of a child. The holes in this group of shells, although irregular in form, are all uniformly near the base, and it is assumed that the shells were strung for a bracelet or anklet. Of the remaining 11 specimens recorded, 5 were unpierced and others had holes of little uniformity. Kidder, Jennings, and Shook (1946, fig. 164,c) illustrate one manner of using Marginella as an ornament. We might suggest that unpierced specimens may also have been used for rattles.

Anomia sp.: 13 entire. (Fig. 44,b.)

These thin nacreous shells are usually pierced by a single hole near the center. There are at least 2 specimens, however, that are unpierced, and 3 that have two holes, though in 2 of these one of the holes is small and may have been formed fortuitously. All the holes were probably drilled, though some now are irregular. They range in size from 1.5 to 4 mm in diameter. One set, found in a cache of a dwelling house, contained 10 Anomia shells ranging from 2.4 to 4 cm in maximum dimension. One was unpierced, others each had a single hole, and 2 had second minor holes.

Various conchlike univalve shells: 11 complete. (Fig. 47,n-t.)

Small conchlike shells, apparently unworked, have been found in many cists and caches containing other artifacts. A lovely example of a triton shell (Cymatium femorale) comes from a house mound cist together with smaller perforated shells (fig. 47,n). Other species found include shells of young Strombus (2 specimens), Busycon perversus Linné (2), Busycon pyrum (1), Fasciolaria papillosa Sowerby (1), Fasciolaria tulipa (1), Conus sp. (2), Ficus papyratia Say (3), and Melongena hispinosa Philippi (1). A few of these have irregular, probably naturally formed holes, and none seems to have been drilled or in any way altered.

Other univalves: 15. (Figs. 44,e-g, 47,u-w.)

There are two specimens of Natica canrena Say with large, round perforations and another with a small, round hole in a similar location (fig. 44,e). Of Nerita fulgurans, there are several examples, both pierced and unpierced (fig. 44,f), and one Neritina specimen of unidentified species has a large, round hole. There are two specimens of Orthalicus princeps (fig. 47,u), one pierced by an irregular hole, and also unworked shells of a Phalium species and Oleacina, which may be intrusive. A fragment of a large, rose moon shell shows part of an accurately drilled hole about 1.4 cm in diameter 2 cm above the edge of the shell. One is reminded of the shell decorated with large, round holes found at Lubaatun (Joyce, 1926, pl. XXIV, fig. 4).

Various bivalves: 23 complete. (Figs. 44,h-j, 46.)

The species include: Psoronaias semigranosus (fig. 44,h), Arca sp. (fig. 46,e,f), Dinocardium robustum Solander (fig. 46,a), Dosinia concentrica (fig. 46,c), Glycimeris pennacea Lamarck (fig. 46,g), Pinctada radiata Leach (fig. 46,d), Pinctada sp., Rocellaria sp., Tellina lineata, and Trachycardium isocardia Linné. Most of these specimens are unworked, but 6 have either slit, cut, or drilled perforations.

The unworked shells probably had practical as well as ornamental uses. R. E. Smith states that, by scraping a ridged shell on a piece of Plasticine, he was able to produce striations very similar to those that occur on unslipped pottery vessels at Mayapan. The use of shells as scrapers of soft materials or as scoops seems very likely in view of their scattered occurrence in various locations. They are also known to have been used as paint cups and as small containers.

Miscellaneous fragments: 212.

Besides the above species, fragments of Cypraecassis testiculus Linné, Dosinia elegans, and Anomalacardia cuneïmeris have been identified in the collection, as well as one fragment of a marine worm case and several of crab claws.

CORAL FRAGMENTS: 7. (Fig. 44,k.)

Six pieces of coral were found in tombs or in association with objects of ceremonial nature. This seems to suggest that they were not merely utilitarian objects but held some significance for the Maya. Pieces of branch coral are reported also from the caches of Uaxactun (Kidder, 1947, p. 66), where their presence seems equally enigmatic.

OBJECTS OF METAL: 50

Metal objects seem to have been introduced into Mesoamerica in Late Classic times, but the absence of metal in the excavations at Chichen Itza, except in postconstruction deposits, seems to indicate that it was not commonly traded into Yucatan until after the foundation of Mayapan. The copper artifacts of Mayapan, although not numerous, exhibit a variety of forms. Gold and tumbaga appear only in minute amounts, but the common looting of caches may in part account for their scarcity. The fact that there was no metal in the earliest deposits here is probably not significant, since these deposits are for the most part construction levels and middens, including few caches and no burials.

Metallurgy was not practiced in Yucatan, but the designs of the gold discs recovered from the Sacrificial Cenote at Chichen Itza suggest that either the Toltec or the Maya themselves hammered or impressed the decoration on ready-made imported forms (Lothrop, 1952, p. 29). There is no indication at Mayapan whether or not this practice persisted.

Dr. William C. Root, of the Department of Chemistry, Bowdoin College, has kindly analyzed some of the metal specimens from Mayapan, and his report appears in full in the next section. It covers also some copper bells from the site of Tamulté de las Sabanas, which are described in Berlin's (1956) report on Tabasco. Here it remains only to make a few remarks on the forms found in the Mayapan collection.

FRAGMENTS OF GOLD FOIL: 2

Both specimens are groups of minute paper-thin flakes that remained in the fill after caches had been removed from under the floor of Str. R-87 (CR 29, p. 328). Specimen 55-1 consists of 10 tiny irregularly torn fragments, some of which show minute rectangular holes, as if the metal leaf had been nailed to some other material. Specimen 55-2 includes 7 similar fragments. The largest, 1.8 by 1.0 cm, has a round hole just under 1 mm in diameter. One side of the foil has a reddish tint, which Root attributes to a layer of corrosion products, suggesting that it may have flaked from gilded tumbaga sheet. Both caches from which these flakes came had been placed in a very late construction, the objects themselves having been removed before the city was abandoned.

FRAGMENTS OF TUMBAGA SHEET: 3

These specimens are thicker than the gold leaf and are gilded by mise-en-couleur (see p. 392). No. 52-197, lot B-4, included 6 minute fragments, together comprising no more than a square centimeter of surface. Unlike the flexible gold specimens, the pieces were brittle and showed traces of green on one side, probably due to their contact with copper. They were found with a copper pellet, but appear to be too thin to have been bell fragments. No. 53-70, lot C-29, is an irregular, pentagonal piece measuring 1.8 by 0.9 cm, and of similar thickness. It was found in the shaft of Str. Q-95, a little more than 2 m below the surface, among bones, earth, and debris. No. 54-210, lot C-81, is rectangular, 1.5 by 0.9 cm. It is somewhat thinner and shows traces of five repoussé discs, about 3 mm in diameter. Two of the edges cut through the design, and although the shape is regular the edges appear broken rather than cut. The fragment was found in debris above a partially destroyed altar of a shrine.

COPPER BELLS AND PELLETS: 22, including 1 fragment and 2 loose pellets. (Fig. 48,aa-ee.)

Lothrop (1952, p. 86) describes the manufacture of copper bells and establishes certain ''styles'' based on forms and decorative details. His distinctions define purely descriptive categories, and seem to have no definite implications concerning the manufacture of the bells. Style A is represented at Mayapan by 2 specimens (fig. 48,w,y), Style A1 by 2 others (fig. 48,v,x), and Style B by 2 large and 2 tiny bells (fig. 48,t,u,bb,cc). The larger bells of the assemblage shown in figure 48,z can perhaps be classed with Style C, but the remaining specimens do not fit neatly into any class of forms described by Lothrop. Some can perhaps be included in the general category of pear-shaped bells (Class D), and all are in some degree deviant from the normal form of this class. Bells with a definite platform on which the loop is placed do not occur at Mayapan, but are associated with wirework bells at Tamulté (Berlin, 1956, p. 145), and it is possible that such bells represent a later form. Actually, although the bells from Mayapan differ widely in shape, they show a remarkable similarity in the technique of their manufacture, and, if distinctions must be made, it might be useful to note that the spherical bell in figure 48,y is made of somewhat thicker metal than the others. The bell in figure 48,u is also sturdier than that in figure 48,t, and is of somewhat unusual form, embellished on its upper surface by two concentric lines. These, however, are very minor peculiarities and may be insignificant. All the bells are made with a double loop handle, apparently integrally cast so that the division in some of them is barely detectable. A small drop, probably the residue from a vent in the mold, appears at the top of the loop, which is always placed at right angles to the slit in the bell. It is rather interesting to note that this is not always true of wirework bells.

The bells shown in figure 48,z, and one other which had disintegrated too badly to be photographed, were found with the skeleton of a child (lot A-110) and in a position that suggested that they were worn on the ankles. Tiny fragments of textile (see p. 404) were found adhering to the larger bells, and two of the bells of the lower row were connected by a bit of cord that held a discoidal shell bead between them. Two other discoidal shell beads were found with the assemblage.

No stone pellets were noted in the collection, but there are a number of bells in the collection without pellets. Two loose pellets from lots B-4 and C-44 measured 4.5 and 6 mm in diameter. They have a rough surface and are only approximately round.

COPPER TWEEZERS: 4. (Fig. 48,o-r.)

From Cervantez de Salazar (Tozzer, 1941, pp. 88, 235) we learn that Indians of Yucatan plucked out their beards with ''some things like pincers,'' and it is possible that the tweezers are instruments of this sort. In addition to the distribution of similar forms, discussed by Root, mention might be made of a pair of tweezers, almost identical in form to the specimen in figure 48,q, found by Gann (1918, p. 71, fig. 21) in a grave at Santa Rita, British Honduras.

COPPER RINGS: 13. (Fig. 48,a-n.)

Narrow bands: 6. (Fig. 48,a-f.) Diam.: 1.6 to 2 cm. Width: 3 to 5 mm. The specimen in figure 48,f is a flat, irregular band; others are slightly concavoconvex. The ring in figure 48,a is decorated on one edge with a slightly raised border cast in the form of a twisted thread. Three of the plain rings were found on a finger bone of an interred skeleton (CR 17, p. 37).

Wide, convex, plain: 2. (Fig. 48,k,m.) Concavoconvex bands of thin copper, 0.9 and 1.1 cm wide. The interior diameter of these bands, about 1.3 cm, is exceptionally small for a finger ring, and these specimens may have served as beads.

Double band: 1. (Fig. 48,j.) Max. diam.: 1.9 cm. Width: 1.2 cm. The interior of this ring does not follow its profile but is a flat band.

Convex, decorated: 3. (Fig. 48,g-i.) Max. diam.: 2.1 to 2.3 cm. Width: 1.5 to 1.6 cm. Concavoconvex band between two cast braid-design borders.

Effigy ring: 1. (Fig. 48,n.) Diam.: 2.1 cm. Width of band: 1.9 cm. The human head with the conical headdress is hollow and opens on the interior of the ring, the eyes and mouth being openings through the metal. A fragment of textile discolored by verdigris can be seen adhering to the body of the ring.

COPPER POINT OR CHISEL: 1. (Fig. 48,s.)

This specimen was not analyzed, and the fact that it was found on the surface makes us uncertain that it is a pre-Columbian piece. A somewhat similar point but slimmer and made of tumbaga comes from Colombia and is published by Perez de Barradas (1954, fig. 124, no. 304). Chisels from Sitio Conte (Lothrop, 1937, fig. 58), also of gold and tumbaga, have some resemblance to the Mayapan form, but no specimens of copper are mentioned.

MISCELLANEOUS COPPER FRAGMENTS: 4

No. 53-71: irregularly shaped disc of thin sheet copper, 1 cm in diameter. Lot C-29.

No. 54-172: fragment of copper ring or handle of tweezers. 9 by 6.5 mm. Lot A-125.

No. 54-206: tiny oval piece of sheet copper, 6 by 5 mm. Lot C-81.

No. 55-74: an amorphous piece of oxidized copper, 18 by 8 by 4 mm. Lot A-169.

WROUGHT IRON LATCH: 1. (CR 29, fig. 12,p.)

A surface find, undoubtedly post-Columbian, possibly from the time of the occupation of the Rancho San Joachin.

REPORT ON THE METAL OBJECTS FROM MAYAPAN

By William C. Root

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Gold and *Tumbaga*

From the Sacrificial Cenote at Chichen Itza were obtained many objects of gold and *tumbaga* (a gold-copper alloy). At Mayapan only five were found, and they were in such fragmentary condition that it is impossible to tell what they might have been. In the looting of Mayapan all the readily accessible objects of value must have been removed. This is equally true of the objects of copper, of which only forty or so were recovered, and most of these were from tombs or caches or were in fragmentary condition.

Only two fragments were of sheet gold, and both were found in caches in a residential quadrangle. Both were very thin, less than 0.1 mm thick, and were tough and flexible. One (1532) was red on one side from corrosion products. It is possible that it is part of the skin from an object of *tumbaga*. The other did not show evidence of corrosion and probably is gold foil.

Three fragments are of *tumbaga*. One (1531) was found in a temple shrine, one (1530) was in the burial shaft of a temple, and the third was in the debris of Gate T of the Great Wall. All are of thin sheet, 0.1 to 0.2 mm thick, and all were gilded by the process of *mise-en-couleur*.

Table 1. Objects of Gold and *Tumbaga* from Mayapan

Analysis	Cat. No.	Au	Ag	Cu	Sn	Pb	As	Sb	Bi	[Ag/(Au + Ag)] × 100
1533	55-1	L	6%	< 10%	x	...	...	...	...	c. 6
1532	55-2	L	< 5%	< 10%	x	...	...	...	...	< 5
1531	54-210	50%	< 1%	50%	t	...	t	...	...	< 2
1530	53-70	34%	< 1%	66%	x	...	...	...	...	< 3
1534	52-197	33%	4%	63%	...	...	...	...	...	11

In Lothrop's treatise (1952), referred to hereafter as "Cenote," there is a comprehensive discussion of the possible sources of the gold in the objects found in the Cenote. His table III (p. 11) gives analyses of Mexican gold, and in table VII (p. 14) are analyses of Mexican *tumbaga*. In tables XVIII (p. 28) and XXI (p. 65) are analyses of sheet gold from the Cenote, and in table XXII (p. 74) are analyses of gilded sheet copper from the Cenote. Tables XXXII, XXXIII, and XXXIV (pp. 98, 99) are analyses of cast-gold objects from the Cenote that are thought to have come from Veraguas and Cocle. In table XXXI (p. 94) are analyses of objects of *tumbaga* from the Cenote. In table XXXV (p. 104) are analyses of cast-gold objects from Guapiles, Costa Rica.

The ratio [silver/(gold + silver)] × 100 approximates the percentage of silver in the original gold from which the *tumbaga* objects were made. This percentage is low in the specimens from Mayapan, 2 to 10 per cent. Mexican gold, except from parts of Oaxaca, contains much more silver than this. Gold from Veraguas and Cocle contains 3 to 10 per cent silver. It seems likely that the five gold specimens from Mayapan are fragments of trade pieces from the south.

Additional evidence for a southern origin of the gold and *tumbaga* objects from Mayapan comes from the fact that they were gilded by the process of *mise-en-couleur*, the method used in Cocle and Colombia. The few objects from the Cenote that were gilded by the application of gold leaf to copper sheet were made from gold with a high percentage of silver and are presumably of Mexican origin.

Copper

MIDDLE AMERICAN SOURCES

Practically no information is available on the composition of native copper from Mexico and Central America or on the composition of ores from which copper might have been obtained by smelting. The regions in which the greatest number of copper objects have been found are western Mexico (Jalisco, Michoacan, Guerrero, etc.), the Valley of Mexico and the adjacent plateau, Oaxaca, Guatemala, the "Bell Cave" in northern Honduras, and Yucatan. The many objects of copper from Yucatan must be trade pieces from one or another of the regions listed above (and possibly Chiapas of which nothing is known), as these all contain deposits of copper, whereas Yucatan, being a limestone region, contains no deposits of metal of any kind.

In an attempt to discover what types of copper are found in the ores from these regions, the 304 analyses (177 from the above areas and 127 from Yucatan) that I have made spectroscopically of copper objects have been grouped into "classes" according to the impurities in the copper.

The classes are based upon the presence or absence of six impurities in the copper: silver (Ag), tin (Sn), lead (Pb), arsenic (As), antimony (Sb), and bismuth (Bi). Gold was also determined, but it turned out that it was of little value in characterizing ores though it was of importance as indicating possible gilding. The classes are represented by a combination of numbers and letters corresponding either to single elements or to various combinations of elements in amounts of 0.01 per cent or more. (In the analyses in the following tables, L means large, or more than 1 per cent; S means small, or 0.1 to 1.0 per cent; t means trace, or 0.01 to 0.1 per cent; and x means slight trace, or 0.001 to 0.01 per cent.)

The combinations that represent the classes of copper are made up of the components shown in table 2. For example, a ring (analysis 1528) from Mayapan contains traces of silver and tin, and slight traces of lead. The class would be represented as "20." The "2" indicates the presence of tin and the absence of lead; the "0" indicates the presence of silver. There is no letter, as the object contains no arsenic, antimony, or bismuth (cf. "No letter," in table 3). A bell (analysis 1514) from Mayapan contains traces of tin, lead, arsenic, and antimony. This would be

Table 2. Classes of Copper

0. Silver is present.
1 or 10. No tin or lead.
2 or 20. Tin but no lead.
3 or 30. Lead but no tin.
4 or 40. Both tin and lead.

A. Arsenic but not antimony or bismuth.
B. Antimony.
C. Bismuth.
D. Arsenic + antimony.
E. Arsenic + bismuth.
F. Antimony + bismuth.
G. Arsenic + antimony + bismuth.

shown as class "4D." The "4" indicates the presence of both tin and lead; the "D" indicates the presence of arsenic and antimony and the absence of bismuth. Since there is no "0," silver is also absent.

In constructing tables 3 and 4 I have included only my own analyses, since these were all made by the same method. The method is not too accurate, and possibly in tables 5 and 6 an "x" should be a "t," or a "t" an "S," or vice versa. Another uncertainty arises from the possibility that, when a bell was cast, the metal was obtained by melting down broken or unfashionable objects with fresh copper. If, for example, one of the broken objects was a wirework bell (probably a trade piece from the Valley of Mexico) containing a large amount of lead, even though the regional metal contained no lead, the bells cast from this melt would probably all have lead shown as "t" or "x." For these reasons, conclusions drawn from an examination of all analyses of objects from a given region or of a given type of object are more significant than any single analysis.

Still another difficulty arises from the fact that for some regions there are too few analyses. For example, from Guerrero, I have analyzed only 3 objects. Hence, in calculating percentages, a single object corresponds to 33 per cent. I have analyzed some 48 objects from Guatemala. Here 1 object corresponds to 2 per cent. From Chiapas, which I suspect was one of the sources of copper in the objects found in the Cenote and at Mayapan and Tamulté, there is not a single analysis. There should be at least 50 analyses from each region from which copper was obtained if the conclusions that are drawn are to be reasonably certain. But conclusions from inadequate data are better than no conclusions at all. With this warning, I shall draw some conclusions from tables 3 and 4.

Table 3. Percentage of Elements and Subclasses in Copper Objects from Mexico and Central America

Percentage with	Sinaloa	Michoacan	Guerrero	Calixtlahuaca	Valley of Mexico	Huasteca	Oaxaca	Tamulté	Cenote, etc.	Mayapan	British Honduras	Guatemala	Bell Cave	Honduras	San Salvador	Number of Analyses
Tin	...	25	33	50	26	20	34	50	67	84	...	6	50	50	20	129
Lead	5	...	33	25	68	...	25	75	74	32	17	6	28	50	40	127
Arsenic	...	25	...	25	26	20	24	100	60	53	...	9	22	50	...	107
Antimony	...	...	...	12	36	...	18	50	41	31	...	4	...	...	...	68
Bismuth	...	...	...	...	26	...	12	75	33	11	...	2	...	...	...	51
Subclass																
1 or 10	95	75	33	25	26	80	51	...	11	5	83	89	39	50	60	123
2 or 20	...	25	33	50	5	20	23	25	15	63	...	4	33	...	...	54
3 or 30	5	...	33	25	47	...	14	50	22	11	17	4	11	...	20	52
4 or 40	...	...	...	...	21	...	11	25	52	21	...	2	17	50	20	75
No letter	100	75	100	63	63	80	72	...	32	42	100	87	78	50	100	181
A	...	25	...	25	...	20	9	25	18	16	...	5	22	50	...	39
B	...	...	...	12	5	...	3	...	6	5	...	2	...	...	...	11
C	...	...	...	...	...	...	3	...	2	...	...	2	...	...	...	4
D	...	...	...	...	5	...	6	...	11	26	...	2	...	...	...	21
E	...	...	...	...	...	...	...	25	7	11	...	2	...	...	...	12
F	...	...	...	...	5	...	...	...	...	...	...	...	...	...	...	1
G	...	...	...	...	21	...	9	50	24	...	...	...	...	...	...	35
Number of analyses	19	8	3	8	19	5	35	4	108	19	6	45	18	2	5	304

Table 4. Percentage of Copper Objects in the 16 Classes That Include 5 or More Examples, Arranged by Subclasses

Class	Sinaloa	Michoacan	Guerrero	Calixtlahuaca	Valley of Mexico	Huasteca	Oaxaca	Tamulté	Cenote, etc.	Mayapan	British Honduras	Guatemala	Bell Cave	Honduras	San Salvador	Number of Analyses
Subclass 1 or 10. No tin or lead																
1	63	13	...	...	...	60	20	...	3	...	...	47	11	...	...	49
10	31	38	33	13	16	20	17	...	5	...	83	33	11	50	60	52
10A	...	25	...	...	...	...	6	...	2	5	...	4	11	...	...	11
10B	...	...	...	12	...	...	3	...	2	...	...	2	...	...	...	5
Subclass 2 or 20. Tin, no lead																
20	...	25	33	25	...	...	9	...	5	11	...	...	22	...	...	18
2	...	...	...	12	5	...	11	...	2	21	...	2	17	...	...	16
20A	...	...	...	12	...	20	...	25	4	5	...	...	...	...	...	8
Subclass 3 or 30. Lead, no tin																
30	5	...	33	12	32	...	6	...	7	...	17	4	...	...	20	23
3	...	...	...	...	11	...	6	...	1	...	...	...	6	...	...	6
30A	...	...	...	12	...	...	...	...	6	...	...	...	6	...	...	8
30E	...	...	...	...	...	...	...	25	5	5	...	...	...	...	...	7
Subclass 4 or 40. Tin and Lead																
40	...	...	...	...	...	...	1	...	8	...	...	...	6	...	20	11
4	...	...	...	...	...	...	...	...	2	11	...	...	6	...	...	5
40A	...	...	...	...	...	...	3	...	7	...	...	2	...	50	...	11
40D	...	...	...	...	5	...	...	...	8	...	...	...	...	...	...	10
40G	...	...	...	...	16	...	3	25	18	...	...	...	...	...	...	25
Subclass A. Arsenic, no antimony or bismuth																
10A	...	25	...	...	...	...	6	...	2	5	...	4	11	...	...	11
20A	...	...	...	13	...	20	...	25	4	5	...	...	...	...	...	8
30A	...	...	...	13	...	...	...	...	6	...	...	...	5	...	...	8
40A	...	...	...	...	...	...	3	...	7	...	...	...	5	50	...	11
Subclass B. Antimony, no arsenic or bismuth																
10B	...	...	...	12	...	...	3	...	2	...	...	2	...	...	...	5
Subclass D. Arsenic and antimony, no bismuth																
40D	...	...	...	...	5	...	...	...	8	...	...	...	...	...	...	10
Subclass E. Arsenic and bismuth, no antimony																
30E	...	...	...	...	...	...	...	25	5	5	...	...	...	...	...	7
Subclass G. Arsenic, antimony, and bismuth																
40G	...	...	...	...	16	...	3	25	18	...	...	...	...	...	...	25
Total	19	8	3	8	19	5	35	4	108	19	6	45	18	2	5	304

In table 3 are shown the percentages and numbers of copper objects from Mexico and Central America having impurities of 0.01 per cent or more, arranged by elements and subclasses. In table 4 are the classes of copper (17 in all) in which 5 or more examples are found, arranged by subclasses. These 17 classes account for 277, or 91 per cent, of the 304 analyses that I have made of copper objects from Mexico and Central America. In the 21 classes with less than 5 examples there are 27 analyses.

Silver is found in 69 per cent of the 304 copper objects that were analyzed, and it seems to be common in all regions.

Tin is present in 50 per cent of the objects from Calixtlahuaca, in 26 per cent of the objects from the Valley of Mexico, and in 34 per cent of the objects from Oaxaca. Of the objects from Tamulté, the Cenote, Mayapan, and the Bell Cave, 50, 67, 84, and 50 per cent, respectively, contain tin. This would indicate that there must be an undiscovered source of stanniferous copper from which the objects from Yucatan were cast.

Lead is found in large amounts only in objects from the Valley of Mexico (68 per cent), Tamulté (75 per cent), and the Cenote (74 per cent). The region from which the metal found in the objects from Tamulté originated is not known. The question of where this might be will be discussed later.

Arsenic is also found in all regions, but to a greater extent in the Yucatan specimens than in the others, except those from Tamulté. There is probably an undiscovered source of arsenical copper. As will be seen later, this may also be the copper that contains much tin.

Antimony occurs primarily in objects from the Valley of Mexico, Oaxaca, and Tamulté. It is not found at all in objects from "Western Mexico" or the Bell Cave. The percentage of antimony in the objects from Yucatan is little greater than in those from the known regions, and so it is probable that there is not an unknown source for this element.

Bismuth like antimony occurs primarily in objects from the Valley of Mexico, Oaxaca, and Tamulté, and in no greater amount in the objects from Yucatan. Here again there is probably no undiscovered source of this element.

Inspection of the center section of table 3 shows that in the Valley of Mexico, Oaxaca, and Guatemala tin and lead seldom occur in combination (subclass 4 or 40) but do occur together in the Cenote, at Mayapan, at the Bell Cave, and in San Salvador. This probably represents a distinct ore.

Other ores could be worked out by further examination of table 4, but it would hardly be worth while until more analyses have been made of objects from Western Mexico, Oaxaca, Chiapas, and Honduras.

Before discussing the source of the copper in the objects from Mayapan it is necessary to consider the source of the metal in the many bells from the "Bell Cave" in northwestern Honduras. It has been assumed by some writers that the bells might represent the stock of some trader from Oaxaca or the Valley of Mexico. Examination of table 4 will show that most of the classes of copper found in the bells from the Bell Cave are also found in Oaxaca and the Valley of Mexico, but not in the same percentages. It is possible that they are from these regions but from a late period when some of the earlier sources of copper had failed. As many of the bells are of unusual design, they may be from some region other than these, perhaps Honduras itself.

In the following discussion, the designation ''Bell Cave'' means the region, wherever this may be, from which the bells of the Bell Cave originated.

Copper from Tamultê

On the basis of the four analyses of bells from Tamultê (table 5) it appears that the copper from which these objects were made differs from samples from regions that could have been sources of ore. It contains lead, arsenic, and bismuth. This combination of elements may represent metal from Chiapas, of which nothing is now known. Many of the objects from the Cenote are of this general composition, indicating that the unknown source of the ore was of considerable importance.

Table 5. Composition of Four Copper Bells from Tamultê

Analysis	Class	Cat. No.	Au	Ag	Cu	Sn	Pb	As	Sb	Bi	Object and Type	
1535	30E	55-479	x	t	L	...	L	t	...	t	Large wirework bell	F-3?
1536	20A	55-478a	...	t	L	S	x	t	...	...	Wirework bell	F
1537	30G	55-478c	...	t	L	...	S	S	t	S	Bell	D-2
1538	40G	55-478b	...	t	L	S	S	S	t	S	Bell	D

Since the two wirework bells are similar in style and also in composition to those found in the Valley of Mexico and adjacent regions, they probably came from there. The two other bells differ from any found in other areas, and it is my guess that they were from some other area, either Chiapas or somewhere in Oaxaca or the Mexican highlands. There are several bells from the Cenote of similar style and composition, but none from Mayapan.

Copper from Mayapan

Eleven of the seventeen commonest classes of copper are found in the Cenote but not at Mayapan. Four of the classes are found at both sites. Only one (class 2) is more common at Mayapan than in the Cenote. This indicates that there is some distribution in time at which the various classes were common and that by the time the copper objects were being acquired at Mayapan many of the sources of the Cenote copper had failed or had not yet been tapped. The composition of the copper at Mayapan is such that the objects could have originated in the Valley of Mexico, Oaxaca, or the Bell Cave. They could not have come from Western Mexico or Guatemala. It is significant that no wirework bells were found at Mayapan, although they were fairly common in the Cenote, in Oaxaca, in the Valley of Mexico, and in Michoacan. They seem to have been a late development in Mexican metallurgy. It is a possibility that objects from the Mexican plateau and Oaxaca reached Mayapan at the beginning of the Mayapan period but that toward the end of the period trade with Mexico was cut off, although it continued to Chichen Itza, and copper objects were then obtained principally from Honduras and the south. Or it could be that Mayapan was destroyed before the distribution of wirework bells was begun.

The problem of which classes of copper were used in different regions at different times needs to be explored in much greater detail, and many more objects of known origin and known associations must be analyzed before any conclusions are much more than hunches.

The composition of the 19 copper objects from Mayapan that have been analyzed is given in table 6. The arrangement is by type of object.

Table 6. Copper Objects from Mayapan, Arranged by Type

Analysis	Class	Cat. No.	Au	Ag	Cu	Sn	Pb	As	Sb	Bi	Object
1515	2D	55-157	...	x	L	t	x	t	t	...	Bell, globular, style A
1517	30E	55-101	x	S	L	x	S	t	x	t	Bell, globular, style A
1516	2D	55-157	...	x	L	S	x	t	t	...	Bell, small, style A-1
1511	2	54-9	...	...	L	t	x	...	...	...	Bell, acorn, style B
1514	4D	55-99	...	...	L	t	t	t	t	...	Bell, acorn, style B
1518	10A	54-267	...	t	L	x	x	t	...	...	Bell, fragment
1513	2A	54-132	...	x	L	t	...	t	...	...	Bell, small, unclassified
1512	4	54-108	...	...	L	S	t	...	...	...	Bell, pear, style D?
1519	2	54-7	...	...	L	S	...	...	...	...	Tweezers, straight
1524	2	55-277	...	x	L	t	...	...	...	...	Tweezers, straight
1522	2B	54-176	...	...	L	t	...	x	t	...	Tweezers, round
1523	2D	55-204	...	x	L	t	x	t	t	...	Tweezers, round
1521	20A	53-192	...	S	L	t	x	t	...	...	Ring, plain
1527	4	54-133	...	...	L	t	t	...	...	...	Ring, double
1526	4E	55-94	...	x	L	t	S	t	x	t	Ring, decorated
1528	20	55-54	...	t	L	t	x	...	...	...	Ring, decorated
1529	30D	55-54	...	t	L	x	t	t	t	...	Ring, decorated
1525	20	55-96	...	t	L	S	...	...	...	...	Ring, with head
1520	2	54-172	...	...	L	S	...	...	...	...	Curved sheet, fragment

Bells. Twenty-one bells were found in Mayapan and its environs; 8 of them were analyzed. Only three of the six styles of bells recognized by Lothrop at the Cenote are present at Mayapan. It is significant that there are no examples of decorated, effigy, or wirework bells. The three types that are present are comparatively simple in style.

Styles A and A-1 (globular, fig. 48,v,w,y). Examples of this widespread style are found in Michoacan, the Valley of Mexico, Oaxaca, and the Bell Cave. Of the 5 examples found at Mayapan, 2 were found in the houses of nobles and 2 in the burial cist of a house in a residential quadrangle. The composition of the 4 bells that were analyzed agrees fairly well with other bells of these styles that have been analyzed and most nearly resembles analyses of objects from Oaxaca.

Style B (acorn or elliptical, fig. 48,t). Bells of this style have been found in Guatemala and the Bell Cave. Of the 5 examples from Mayapan, 2 were from ceremonial structures and 3 from surface debris. The composition of the 2 bells that have been analyzed resembles that of objects from the Bell Cave rather than that of objects from Guatemala.

Style D (pear shape, fig. 48,z). Bells of this style are found most frequently in Michoacan and Oaxaca. Nine examples were found at Mayapan; 8 of them, together with 2 bells of style C, were on the ankles of a child's skeleton in a burial in the house of a noble. One bell was analyzed from the group of 8. Its composition agrees fairly well with that of the few bells from Oaxaca that have been analyzed, but the shape of most of the 10 bells in the infant's burial is not quite like that of most bells of this style from Oaxaca. I should say that it is likely, but not certain, that they originated in Oaxaca.

Tweezers. There are 4 examples of tweezers from Mayapan. None was found in the Chichen Itza Cenote. Two are of a common type, Aguilar P.'s style 2 (Aguilar P., 1946, Lam. III); the other two are of an unusual type, somewhat like Aguilar P.'s style 5, except that they have a much longer stem or handle.

Style 2 (fig. 48,o,p). Examples of this style have been found in Michoacan, Guerrero, Oaxaca, and at Zaculeu in Guatemala. The two examples from Mayapan were found in house mounds. Their composition is similar to that of objects from Calixtlahuaca and Oaxaca. These tweezers are probably trade pieces from Oaxaca.

Style 5, modified (fig. 48,q,r). No other tweezers of this style have been found in Mexico as far as I know. One (1522) is from a house mound; the more elaborate one with the twisted handle (1523) is from a cist in the house of a noble. They are of similar composition and probably of similar origin. Tweezers like these have been found on the coast of Peru at Chancay (Baessler, 1906, fig. 277) and at Pachacamac (Schmidt, 1929, pl. 397, no. 4). The tweezers from Pachacamac have a twisted handle very similar to 1523. The composition of these tweezers, however, is different from that of objects from Michoacan, Oaxaca, the Bell Cave, or the Peruvian coast. Their origin remains unknown.

Rings. Thirteen rings were found at Mayapan, all in house mounds. All are similar to rings found in the Cenote.

Plain rings (fig. 48,a-f, j-m). Six of the rings were simple bands; two were thicker with a slight bulge, and one was double.

The only plain ring (1521) that was analyzed has the same composition as the two plain rings that were analyzed from the Cenote. Objects of this composition are found in Michoacan, Oaxaca, and Honduras. It is not possible to say which of these areas was its place of origin, but since so many of the metal objects from Mayapan seem to have been trade pieces from Oaxaca, this is as likely a place as any.

The double ring (1527) is similar to that illustrated in "Cenote," figure 74,a. Its composition is somewhat different from that of the double ring from the Cenote that was analyzed in that it contains only tin and lead as impurities. This composition corresponds to a copper that is found most frequently in Oaxaca and Honduras. Neither of the rings with the slight bulge (similar to those illustrated in "Cenote," fig. 74,d) was analyzed. Similar rings have been found in Oaxaca.

Decorated rings (fig. 48,g-i). The three rings with decorated bands (similar to that illustrated in "Cenote," fig. 74,c) somewhat resemble rings from Monte Alban in Oaxaca. All three are so similar that they must be from the same source, although the composition of one of the three differs from that of the other two. In general the metal is similar to that in Oaxaca or Honduras. I think, everything considered, that they are trade pieces from Oaxaca.

Effigy ring (fig. 48,n). The ring with the head (1525) is of a design somewhat like that of rings from Oaxaca or the one from the Cenote illustrated in "Cenote," figure 72,c. Its composition corresponds to that of metal found most commonly in objects from the Valley of Mexico, Oaxaca, and Honduras. It can be assumed that this ring is also a trade piece from Oaxaca.

Conclusions

Of the 38 complete copper objects found at Mayapan, 11 are almost certainly from Oaxaca, 5 are from the same source as the objects from the Bell Cave in Honduras, 20 of uncertain origin may well be from Oaxaca, and 2 may possibly be trade pieces from Peru. The few examples of sheet gold and gilded copper are probably trade pieces from the south.

It would also appear that Mayapan was destroyed, or else cut off from trade with Central Mexico, before the introduction of wirework bells from the Mexican plateau, or of filigree rings and ornaments from Oaxaca, except for one rather primitive effigy ring.

Mayapan, as the result of looting, is so poor in objects of metal that it is difficult to say that the few objects that remain really give an adequate picture of what was once to be found there. Moreover, owing to the lack of analyses from other areas of Mexico, conclusions as to the origins of the few specimens that were found can hardly be much more than guesses.

OBJECTS OF FIRED CLAY: 55

All vessels, figurines, and musical instruments made of clay are described in R. E. Smith's forthcoming report on the pottery of Mayapan. There are only a few other objects in the collection actually made of clay and fired, but many more were refashioned from broken pieces of vessels. These are sometimes difficult to recognize and to segregate from a sherd collection. Those described here, however, are sufficiently altered to show clearly that they had been cut for a definite, though frequently unknown, purpose.

SPINDLE WHORLS: 7. (Fig. 50,a-g.)

The number of spindle whorls found at Mayapan is insufficient to suggest their common use but probably too large to represent a mere admixture of earlier material. Most of the specimens are surface finds. The paste of three, in the opinion of R. E. Smith, who kindly examined them, resembles that of Slate wares, suggesting that they may survive from an earlier tradition. These whorls are decorated (fig. 50,a-c), and they are of a form that was in use at Chichen Itza and is described as "cupcake" by Kidder (1943). One is gouged and incised with the design of a bird (fig. 50,a), a very common motif at Chichen Itza. On the sides of this spindle whorl is a "cloud-band" motif, which occurs elsewhere at both sites. The other two specimens of this form are decorated with simple incising. One has only radiating lines; the other repeats the bird motif, but in a simplified form, superimposed on a linear rotary arrangement (fig. 50,c).

The remaining spindle whorls include one that is hemispherical, another in the form of a truncated cone, and two flattened whorls, one with concave profile and the other with straight sides and a concentric groove. The last two resemble forms common on the east coast of Yucatan, and their material is more like that of Mayapan wares than like Slate. The variety with an oval section, which is the dominant form at Chichen Itza, was not found in our excavations, but Kidder (1943) reports one from Mayapan uncovered earlier by Brainerd. The variety of forms found at Mayapan is notable, suggesting that there was no local center for the manufacture of spindle whorls. Most specimens are probably imports from other regions, though the "cupcake" variety may have been made locally in earlier times.

EARPLUG FLARES (?): 1 pair. (Fig. 50,i.)

These are of orange paste which is untempered but contains tiny flecks of mica that do not usually appear in Fine Orange pottery from Mayapan. They are spool-shaped and with an incised swastika design on one face. Since they were found under debris filling a room, they were probably in use at the time of the abandonment of the city.

UNIDENTIFIED RING: 1. (Fig. 50,h.)

The paste of this pottery ring is very fine and resembles that of Fine Slate, or of what R. E. Smith names "soapy brown." It has a thick, smooth, waxy white slip or coating that does not resemble the finish of any of the known wares used at Mayapan but is apparently related to the finish of earlier Slate wares.

CHILE GRINDER OR PESTLE: 1. (Fig. 50,o.)

This chile grinder, or pestle, of coarse unslipped paste, with a crude animal head sculptured at one end, is identical to the common type used at Chichen Itza, where a number of similar specimens have been found.

BEAD: 1

A small spherical bead of Fine Orange clay, with a cylindrical perforation. Diam.: 7 mm. Perforation: approx. 0.5 mm. Lot C-109.

CYLINDRICAL STAMPS: 3. (Fig. 50,j,k,m.)

The single complete stamp or seal is about the size of a finger ring (fig. 50,j). It is made of coarse clay similar to Mayapan "porous gray," and the surface is badly eroded, so that the design, which appears to be a panel of scrolls, possibly representing a profile serpent head, is now not entirely clear. Another fragment (fig. 50,k) shows a fret design and is made of a finer paste resembling that of "Thin Slate." The third (fig. 50,m) is much larger, with an indefinite motif which includes scrolls and a rectilinear design. The paste of the last specimen is a reddish brown, similar to the paste of Medium Slate wares, but lacking a slip.

REWORKED POTSHERDS: 40. (Figs. 49, 50,n,q-u.)

Drilled discs: 7. (Fig. 50,n,q.) Diam.: 2.6 to 6.2 cm. Five are of Mayapan Redware, one of lightly striated pottery with a calcareous coating, also typical of Mayapan, and one of an unidentified glossy orange-red finish that resembles the finish of Tulum Redware. The last has a conical perforation; three others have biconical holes; two have shallow drilled pits in the center that do not pierce the sherd (fig. 50,q). All but one have been cut to roughly discoidal form, and though the edges show some wear they do not appear to have been used. The aberrant specimen (fig. 50,n) is perfectly flat and has a beveled edge. Originally it probably had two holes and may be a different type of artifact.

Plain discs: 7. (Fig. 50,s.) Similar to the above; roughly shaped discs without drill holes. Diam.: 2.0 to 4.1 cm. All but two are probably from vessels of Mayapan Redware. One has a cream slip on one surface, and another is unslipped.

Other shaped sherds: 15. (Fig. 50,t.) All are probably of Mayapan Redware, though on two the slip is too worn to be identified. The maximum dimension varies from 3.0 to 8.7 cm. Rectangular and oval forms predominate, but there seems to be no standard shape. Edges in most specimens are smoothed or worn down.

Sherds with used edge: 5. (Fig. 50,u.) One of these was apparently originally a drilled disc, like those already described. In this one, however, a segment was removed by a deep groove worn by using some instrument on the edge of the disc. The groove is narrow and longitudinally concave. Similar grooves appear on two other drilled sherds, in one of which the groove penetrates through a biconical perforation. Another specimen was shaped but not drilled, and one is amorphous, with a relatively shallow groove. The first four specimens are so similar in size and shape that they appear to be tools made for a specific purpose rather than sherds picked up at random for a certain use. The nature of these implements, however, is unknown.

Large drilled ovals: 3. (Fig. 49,a-c.) These are much larger than the perforated discs, and we have no complete specimen. The smallest fragment measures 8.5 cm, the largest 10 cm. The shapes are roughly ovoid, with a biconically drilled hole, at least 6 mm in effective diameter, placed near one end of the oval. All are made from sherds of Mayapan Redware jars and are slipped on only one side. Their function is unknown, but it seems likely that they had some practical use, such as weighting a plumbline for masonry construction.

Notched sherds: 3. (Fig. 49,d-f.) Two are of Mayapan Redware, one of Black-on-cream ware. Forms are roughly rectangular, notched on opposite sides. The notches were apparently worn by abrasion to rounded edges. These objects, like the above, may have been used as small weights on fabric or with cords. Their occurrence in large numbers at Xcaret on the east coast, reported by E. Wyllys Andrews, suggests their use as fish-net weights or sinkers.

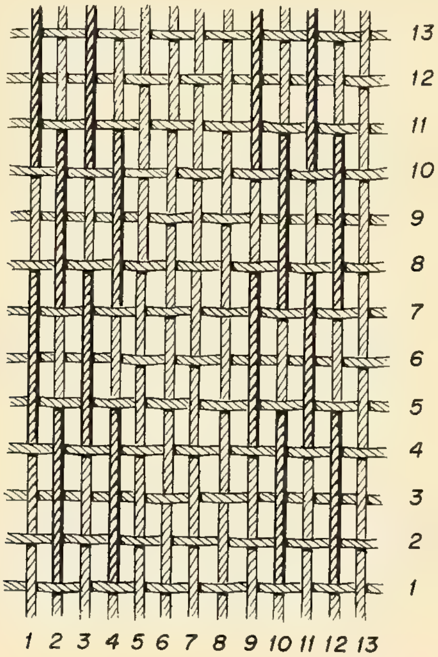
TEXTILES AND TEXTILE IMPRESSIONS: 11. Report by Joy Mahler

Bits of Woven Fabric: 4.

The textile fragments differ from one another in construction, and no. 3 may well represent a technique previously unreported for the New World. Thus neither summary nor comparisons can be made, although the yarns are identical in all samples. These are all undyed cotton, one-ply, Z-spun. The identification of material has been verified by the Botanical Museum of Harvard University.

In the analyses of the fragments the decision as to which yarns comprised the warps is by no means positive, since only one piece retains evidence of a selvage. We believe it to be correct, however, through knowledge of pre-Spanish Peruvian fabrics, some pre-Spanish Middle American, and modern Mexican and Guatemalan textiles.

1. No. 55-98, Lot A-550. (CR 36, p. 487 and fig. 4,d.) One-faced warp float. This fragment, which measures about 3 by 1.4 cm, is woven with one-ply, Z-spun, undyed white or tawny cotton. The yarn, though somewhat unevenly spun, is quite fine, and the quality of both warps and wefts is virtually identical. Such sequence as can be observed consists of a series of warps floating over an additional weft every third row. The warps, as indicated in the illustration, are 1, 3 and 9, 11 for weft rows 6 and 12; alternating with warps 2, 4 and 10, 12 in sheds 3 and 9. The slackness of the warps gives the impression of floats in pairs. The resulting pattern cannot, of course, be determined. It is odd that the floating yarns are not colored, as the technique normally is associated with color change used to create designs.



2. No. 55-96. Lot A-550. (CR 36.) Fragments adhering to a copper ring, figure 49,n, show a plain weave, single warps and wefts, warp-faced. The sample is too small for an accurate warp-weft count.

3. Uncatalogued fragment. Lot A-110. (CR 19, pp. 77, 78.) This is a plain weave with single warps and paired wefts. A section of side selvage shows no special treatment of the area.

4. Uncatalogued fragment. Lot A-110. (CR 19, pp. 77,78.) A double-cloth variant, this piece has warp floats on one face of the fabric.

Impressions of Woven Fabrics: 4.

The impressions on plaster-coated pottery were examined on one actual sherd, and others by photographs or molds. They yield little information. Their general appearances suggest that, as with the actual textile fragments, one-ply Z-spun cotton yarns were used in construction. Two consist of single warps and paired wefts, the rest being simple over-one, under-one plain weaves.

1. Lot A-238. A plaster mold and photograph show an area approximately 7.5 by 4.5 cm of textile impression. The best-preserved section consists of single warps crossed by paired wefts, with a count of about 20 × 12 pairs per 2.5 cm.

2. Lot C-35. A latex mold shows a relatively large area, approximately 10 by 6 cm, is cloth-impressed, with one section quite clearly a second layer. This probably represents a fold, as the edges are straight, but one end has torn warps. The two layers are identical. All yarns are about equal in diameter, the warps being single, the wefts, paired. The weaving is compact, and the warp-weft count averages 32 × 26 pairs per 2.5 cm.

3. Lot C-64b. A small sherd has about 1 sq cm with an impression, apparently of a plain weave, single warps and wefts.

4. Lot C-14. Photographs of three sherds show three layers of stucco, of which the lowest two have textile impressions. The first layers are unobservable, and all the second-layer textiles seem to be finely woven plain weaves.

Fragment of Cord: 1.

Lot A-110. (CR 19, p. 78.) A bundle of Z-spun yarns are twisted together in the opposite direction. They obviously had encircled a slender cylindrical copper object and had been knotted.

Burnt Fragments of Fiber

No. 55-139. Lot A-193. Bits of carbonized and exceedingly brittle material, apparently a structural fiber, are probably *Agave* sp. [Identified by Dr. Margaret A. Towle, Botanical Museum, Harvard University.] Remains of mortuary offering. See CR 29, p. 326.

Impression of Mat

No. 55-43. Lot A-165. Impression on sherd of Fine Orange pottery. See figure 50,p.

CYLINDER OF COPAL

Many burned remains of copal were found on the floors of temples and shrines in Mayapan, and occasionally as residue adhering to fragments of incense burners and cache vessels. None preserved the original form to show whether the copal was shaped in the manner of the offerings found in the Cenote at Chichen Itza. Only one small cylinder (no. 55-269, lot A-576), probably made of a mixture of rubber and copal, survived under the floor of a house. It is 9 to 11 mm in diameter and 12 mm high. Its surface was smooth but broken by a band of rough texture about 4 mm wide encircling the cylinder as if it had been ringed with another material or had been set into a hole from which both ends projected. The purpose of this little artifact is unknown, but seemingly it is more than a form intended as a burnt offering. The mixture of rubber and copal may represent a synthetic material, which seldom survives. No investigation of the properties or of the possible practical uses of such a material is known to me.

ARTIFACTS FROM SITES IN THE VICINITY OF MAYAPAN: 46

Roughly two-thirds of the specimens in this collection come from the site of Santa Cruz, a small group of badly ruined platforms about 1.5 km southeast of Mayapan (CR 18). The pottery of the lower levels here predates the ruins of Mayapan. The upper levels contain both Mayapan and earlier material. Three specimens come from excavations in a large mound in the modern village of Telchaquillo, 1 km north of Mayapan (CR 18). The material within the mound is largely of Mayapan date but contains a strong admixture of earlier pottery, suggesting that earlier constructions lie buried within. Of the remainder of the collection, 5 specimens are from neighboring cenotes and 8 come from the walled site of Chacchob, 40 or more kilometers to the southeast (CR 6, CR 39). The pottery of this site contains only a small proportion of wares of Mayapan date. All the sites were presumably within the jurisdiction of Mayapan when it was functioning as a capital.

The specimens have been separated into two groups: those that represent Mayapan types, or are probably contemporary; and those that may be of earlier date.

Objects of Mayapan Types: 19

LIMESTONE TOOLS: 5

Fragment of mano: No. 54-3, Lot E-49 (Santa Cruz, surface). Oval in section, with one flattened grinding surface. Diam.: 6.2 to 7.1 cm. Probably blunt-ended type (cf. fig. 11,a).

Fragment of rubbing mano: No. 54-275, Lot E-98 (Telchaquillo). Diam.: 6 to 7.5 cm. Tapering form. Round in section with one flat surface.

Subspherical stone: No. 54-46, Lot E-73 (Santa Cruz, upper stratum). Diam.: approx. 6 cm. Surface smooth, unpolished, facet probably formed by grinding (similar to fig. 14,h).

"Pot lids": 2. No. 54-1, Lot E-51; No. 54-45, Lot E-73 (Santa Cruz, surface and upper stratum). Diam.: 9.7 and 11.6 cm. Thickness: 2.3 and 2.8 cm. Both made of poor native limestone, roughly chipped on edges (see fig. 17).

CHIPPED FLINT TOOLS: 7

Sharp point with rounded base: Figure 51,b, left (cf. fig. 29,d-i). Workmanship somewhat better than is usual at Mayapan. Note parallel flaking, and retouch on point.

Sharp point with angle at base: Figure 51,b, center (cf. fig. 29,v-bb). Workmanship and form comparable to those of Mayapan.

Hatchet-form flints: 2. Figure 51,b, right (cf. fig. 31). Also one fragment, No. 56-63, Lot E-73.

Fragment: No. 54-14, Lot E-53 (Santa Cruz, middle stratum containing some Mayapan sherds). Probably butt end of knife. Milky white chert, with spot of cortex on one face.

Fragment: No. 54-15, Lot E-53 (Santa Cruz, middle stratum containing some Mayapan sherds). Mid section of knife? Gray, streaked chert.

Fragment: No. 56-65, Lot E-78. Retouched chip.

OBSIDIAN: 1

Arrow point: No. 54-2, Lot E-51 (Santa Cruz, surface). Similar to second specimen, figure 35,c.

Flake blades: Placed with Mayapan collection.

BONE: 4

Three tubular bone sections: No. 55-54, Lot E-59 (Santa Cruz). One of bird bone, others mammal.

Antler: tool handle? No. 54-90, Lot E-99 (Telchaquillo, upper stratum). Cut section of antler with burr trimmed off and rectangular hollow in end. 13 cm long. (Cf. fig. 40,v-x.)

METAL: 1

Copper bell: Figure 51,d. (Cf. fig. 48,t.)

POTTERY: 1

Drilled disc: No. 54-39, Lot E-73 (Santa Cruz, upper stratum). 3.8 by 3.7 by 0.7 cm. Two shallow conical pits drilled at center from opposite sides (cf. fig. 50,q).

Pre-Mayapan Types?: 23

STONE ORNAMENTS: 4

Three perforated jade discs: Figure 51,a, second row.

Broken limestone bead: Figure 51,a, top row, right.

CHIPPED FLINT TOOLS: 7. (Fig. 51,c.)

Among these are 2 fragments of stemmed points, 2 small asymmetrical knives or scrapers, and 2 unidentified fragments. The stone is opaque and shows a peculiar fracture, rarely seen on tools from Mayapan. It varies in color but is often deep brown or reddish and is always opaque. In addition to the illustrated specimens there is a flake blade of similar material: No. 52-130, Lot E-39 (Chacchob, surface). 3.7 by 1.5 by 0.25 cm. Dark brown flint. Channel 0.7 cm wide. Edges slightly wavy, but unused.

OBSIDIAN: 1

Fragment of flake blade, No. 54-271, Lot E-68 (Santa Cruz). 1.3 by 1.3 by 0.15 cm. Green obsidian.

OBJECTS OF SHELL: 6

Large shell ring: Figure 51,a. This is similar to Mayapan forms, but is made from a species associated with the Pacific coast and not found at Mayapan. Its date is uncertain.

Oliva with cut spire: No. 54-53, Lot E-59 (Santa Cruz). Also similar to Mayapan forms, but from a level that contains exclusively earlier material.

Small cut fragment of univalve: No. 54-53, Lot E-59.

Two perforated shell discs: Figure 51,a, third row. Similar to Mayapan forms, but more accurately shaped and associated with pre-Mayapan material.

Unidentified object of shell: Figure 51,a, third row.

POTTERY: 5

Five decorated spindle whorls: Figure 51,f. The 4 from Chacchob are decorated in gouged and incised technique and are very similar to the spindle whorls from Chichen Itza, which Kidder (1943) designates as "cupcake" in form. They show no finish, but their paste appears identical to that used in Slate wares, and their presence here, where material from the period of Mayapan is very scarce, is good, though not entirely conclusive, evidence of their earlier manufacture. The lot of pottery with which they were found included only 33 sherds, all of pre-Mayapan date except 1 fragment of a gray incense burner.

Unknown Period: 4

CARVED LIMESTONE ORNAMENT: Figure 51,a, first specimen.

STONE BEADS: 2. (Fig. 51,a, first row center.)

WOODEN STATUETTE: No. 56-106, Lot E-508, Cave of Dzab-Na (CR 35).

SUMMARY

Small as this collection is, it is sufficient to suggest a change in the flint industry shortly before or after the foundation of Mayapan. The flints from Chacchob, which include stemmed points, are dark and smooth-textured. They are associated here with Medium Slate ware and are similar to flints found in Chichen Itza and in the Puuc. Although at Santa Cruz similar flints are found in upper deposits, the fact that they occur in higher proportion here than at Mayapan is suggestive of an early date, for at Santa Cruz the proportion of Slate ware in all levels is higher than at Mayapan.

It is also probably significant that the three jade discs found in a low stratum at Santa Cruz are of finer material and better polished than any of the jades recovered at Mayapan. This is true also of some of the shell ornaments, although the forms and the techniques are practically identical at the two sites.

The evidence of the spindle whorls found at Chacchob and at Telchaquillo, though not sufficient to refute Kidder's suggestion (1943, pp. 96, 97) that spindle whorls may appear in Yucatan only in very late times, nevertheless makes the suggestion less tenable than before. The similarity of the paste of the ''cupcake'' specimens from Chacchob to the pastes of Medium and Fine Slate wares, and their association with such wares at Chacchob, suggest, for this form at least, an origin in Late Puuc or early Toltec times. The variety that is oval in section and is more frequent at Chichen Itza than the ''cupcake'' type has not been found at Chacchob and may be strictly a local variant or one of later origin.

NOTES ON ARTIFACTS FROM CHICHEN ITZA: 7296

A Brief Summary of Objects Listed in the Catalog of Carnegie Institution of Washington

The objects listed here were excavated by Carnegie Institution between the years 1924 and 1936, with the addition of a few from pottery trenches made by E. M. Shook and R. E. Smith in 1955. The author has not examined the specimens of the older collection, but has used data recorded in the Carnegie Institution catalog, as well as in an older list of accessions. Some of the specimens were photographed or sketched, but descriptions of some others are inadequate to place the specimens among the types defined for Mayapan. The objects, however, are grouped as nearly as possible in a parallel series, and types rare or absent at Mayapan are distinguished by an asterisk.

Limestone Carvings: 2

Many pieces listed in the catalog will not be dealt with here since they are fragments of architectural sculpture and small figures such as banner holders, atlantean altar supports, and small idols. Of the type we designate as "altar figures" there are only two possible examples. One is a figure of a frog, 22.1 by 10 by 10.2 cm, found on the east side of the Temple of the Warriors. It is a simple but naturalistic rendering that seems to bear little relation to the Mayapan figures. More pertinent to the type is a small turtle found near a sweat house (fig. 52,a). This also is more naturalistic, particularly in the treatment of the head and the flippers, than the turtles of Mayapan, but it is nevertheless sufficiently similar to be classed as an altar figure. In this connection, it may be recalled that a pottery turtle vessel cached in a doorway of the Caracol (Ruppert, 1935, fig. 278) is also very like the turtle vessels found at Mayapan. Although the Caracol is usually considered to be of a style transitional between the Maya and the Toltec, and a relatively early date is ascribed to it, there is evidence that it was occupied in post-Toltec times, and the buried turtle cache suggests that the final construction was nearer to post-Toltec than to pre-Toltec times. In any event, both the cache bowl and the sculpture are unique examples at Chichen Itza, and it is probable that altar figures appear in northern Yucatan for the first time not long before or even after the establishment of Mayapan.

Limestone and Crude Chert Tools: 342

METATES: 36

Strömsvik's (1931) study of Chichen Itza metates shows that the type most commonly used during the occupation of the city is very similar to that of Mayapan and that it is similarly worn. The modern limestone form is also the same at both sites. On the other hand, ancient limestone tripod forms illustrated by Strömsvik are not represented at Mayapan except possibly by a few ambiguous fragments, although somewhat similar forms occur in lava. It seems probable, therefore, that the tripod form did not come into common use until after the abandonment of Mayapan or possibly even after the Conquest. Chichen Itza continued to be a place of pilgrimage into early colonial times, and the Spanish found a settlement there on their arrival, at a time when Mayapan had already been abandoned for almost a century, so there is some reason to expect there material from the Conquest period. It seems likely that the native tripod forms immediately precede the type made with steel tools.

VESSELS AND MORTARS: 3

The only stone vessel listed is a cache vessel from the Temple of the Warriors (Morris, Charlot, and Morris, 1931, vol. 1, fig. 119), but in the ruins are many incense burners, usually carved with a representation of a face. Sixty-three were recovered in excavation of the Caracol (Ruppert, 1935, pp. 143, 144). They do not occur at Mayapan and are not considered here. A tripod mortar was also found in the Caracol (ibid., p. 265) but it is of a different type from the Mayapan vessels, which have an evenly curved interior, and is more nearly in the form of a bowl or dish with erect sides and a gently curved bottom.

There is also a fragment of an alabaster or marble vessel from the Initial Series group. Such vessels were not in use at Mayapan, though two very doubtful fragments described under Miscellaneous forms of fine stone may originally have been parts of such vessels.

PESTLES: 2. Max. diam.: 7.2 by 4.2 cm.

One is somewhat irregularly shaped with one rounded end and with an abraded convex surface on the other. The other is shaped like a pottery chile grinder, with an oval, slightly convex grinding surface.

MANOS: 223

These, like the metates, are identical to the corresponding forms at Mayapan. Both the blunt-ended and the knob-ended types are present and in similar proportions. The fine cigar-shaped form is not recorded, but it is exceptional at Mayapan and may be a variation of ceremonial rather than practical function.

RUBBING STONES: 10

The rubbing mano is not distinguished in the catalog from corn-grinding forms. Judging from sketches, photographs, and descriptions, it probably occurs, but not as frequently as at Mayapan, and there is no indication of the use of manos for polishing plaster. Morris (Morris, Charlot, and Morris, 1931, vol. 1, p. 210) believed that wooden implements were used for this purpose at Chichen Itza, and he may be correct, for the plaster-polishing mano has not been reported from Maya sites of Classic date. A number of rubbing stones with flat facets are listed from Chichen Itza, but all those of which we have descriptions are natural pebbles of hard limestone or flint with one surface worn down by use.

*HAND HAMMERS OR PECKING STONES: 35? (Fig. 52,b.)

According to Morris (Morris, Charlot, and Morris, 1931, vol. 1, p. 212), the most prevalent type of hand hammer was pointed at one end (fig. 52,b), but he adds that "as a result of long wear, the objects were finally abraded to almost spherical form." Thus, when worn, they must have closely resembled the spherical hammerstones of Mayapan, though Morris makes no mention of this type. Lacking descriptions, we do not know whether it is included in the 31 "crude hammers" listed in the catalog, or whether these are all pointed. Only 4 specimens in the collection are actually designated as "pecking stones."

SUBSPHERICAL STONES: 9

The spherical hammerstone is not as clearly represented at Chichen Itza as it is at Mayapan, but, in addition to specimens that may be included as "hand hammers," the following roughly spherical stones are described:

No. 704: Diam.: approx. 7 cm. Heavy, fine-grained limestone; irregular, probably natural form.

No. 1071: Diam.: 3 cm. Smooth quartz ball.

No. 1180: 6 by 5 by 4 cm. Limestone. Irregular, roughly spherical, may be naturally shaped.

No. 1181: Diam.: Approx. 7 cm. Fine-grained limestone. Irregular smooth form, with hammering scar.

No. 1553: Diam.: Approx. 4 cm. Limestone. Pecked surface with two depressions forming ridge (cf. fig. 14,q).

No. 1668: 9.8 by 7.2 by 6.5 cm. Hard white limestone, rough surface.

No. 1669: 7.2 by 7.2 by 6.0 cm. Chert.

No. 1670: Max. diam.: 8.4 cm. Irregular form. Chert.

No. 1706: 7 by 6 by 4 cm. Chert. Pecked on periphery. Very similar specimens have been found at Labna, and this may be a Puuc form. There is one specimen resembling it from Mayapan (fig. 14,f).

*GROOVED HAMMERS: 8. (Fig. 52,c.)

Lengths: 11.6 to 19.5 cm. Max. diam.: 8.0 to 9.5 cm. The form is oval, usually with one end slightly more pointed than the other. Groove encircles implement halfway between the two ends, which are often worn by battering. Only one example, smaller than any at Chichen Itza, was found at Mayapan.

SUBCYLINDRICAL HAMMERS: 2

No. 1551: 8 by 5.6 by 3.6 cm. Chert. Oval in section. Both ends rounded and pecked.

No. 1671: 10.5 by 7.5 by 6 cm. Cherty limestone. Probably portion of oval mano. Both ends pecked.

OTHER POUNDING TOOLS: 4

One oval pounding tool and two fragments of manos with broken end used for pounding are recorded. A third broken mano is shaped roughly to an edge, forming an axe-like implement with a dull edge.

BARK BEATERS: 3 fragments

Two are oval, accurately shaped, and scored with regular straight lines (cf. fig. 16,a,b). One of these is cross-grooved on one side. The third specimen is roughly rectangular, with slightly convex faces and irregular grooves differently spaced on the two faces. This type was not found at Mayapan.

POLISHING PEBBLES: 3

Similar to those of Mayapan. Two of fine white limestone. One of limestone impregnated with copper salts? 8 by 5 cm. One surface polished.

MISCELLANEOUS LIMESTONE FORMS: 4

No. 36-11: Rectangular stone with 5 perforations (cf. fig. 20,k).

No. 780: Miniature mano; 9 by 3 cm.

No. 205: Small stone drum. Diam.: 9.5 cm. Ht.: 8.5 cm. Circular depression in one end 2.5 cm diam., 0.7 cm deep.

No. 57-4: Grooved pebble, 6.2 by 2.5 by 1.8 cm. Deep, irregular lengthwise groove, curved. Similar to tool in figure 19,c.

SUMMARY

Manos and metates appear to have been identical at Chichen Itza and at Mayapan. The presence of more limestone tripod metates at Chichen Itza may be due to its reoccupation in late times. Masonry-working tools, on the other hand, show some interesting differences. Plaster-smoothing tools probably were made of wood at Chichen Itza, whereas at Mayapan there are many of limestone. Spherical hammerstones apparently superseded pointed pecking stones and grooved hammers. At both sites, however, fragments of manos were sometimes re-used for hammering or were pecked at the ends to make the "subcylindrical hammer." Stone discs we designate as "pot lids" are found only at Mayapan. The presence of a rectangular bark beater at Chichen Itza may be of some interest, for it is principally a highland form.

Tools of Imported Stone; 20

METATES OF VOLCANIC STONE: 6; 2 complete, 4 fragments

One complete specimen is a small slab grinding stone or metate with four legs (Strömsvik, 1931, fig. 11). The other measures 18.8 by 15.7 cm and has three very short stubby legs. It is not altogether certain that it comes from the site. One of the fragments (Strömsvik, 1937, pl. 2,a) is slablike and has a foot set flush with a square corner, very like modern metates. Another has a rectangular leg set in from a rounded corner. Apparently, as at Mayapan, more than one lava form was imported or brought by immigrants to the site, but the occurrences are rare and no regular trade in metates is indicated.

MANOS: 4; 1 complete, 3 fragments

The complete specimen has square-cut ends and three equally used sides. Two fragments of lava are blunt-ended and flattish-oval in form. One of granite, squarish in section, is of doubtful provenience.

OTHER IMPORTED TOOLS: 3

Subspherical stones: 2. One granite stone 4 cm in diameter, with flat pecked surface; possibly end of mano, re-used. One natural stone with scars, 7.5 by 5 by 2 cm. The true spherical hammerstone does not seem to occur.

Subcylindrical hammerstone: made from end of oval granite mano. Broken end rounded and pecked.

WHETSTONES: 3

Fragments of schistose rock, unshaped; apparently used for sharpening implements.

MISCELLANEOUS: 4

No. 545 (fig. 52,ff): Pebble of dark red, fine-grained stone, 9.5 by 6 by 1 cm. Slight depression in worn surface (cf. fig. 23,k).

No. 645: Chisel-like implement of slate (fig. 52,d).

Various fragments of lava, quartz, slate, etc.

Nos. 53, 1456: Igneous pebbles, undescribed.

SUMMARY

At both sites, large tools of imported stone are rare in comparison with those of limestone. The lists show no differences that can be regarded as significant.

Artifacts of Fine and Polished Stone: 184

CELTS: 25

Small, dark green celts: 9. (Fig. 52,g,h.) Lengths: 4 to 6.5 cm. Widths: 3 to 4.5 cm. Various dark gray to green-black dense stones. Tapering form, except two fragments which have parallel sides near bitt. Polished mostly on working edge. Similar to Mayapan examples, but more specimens show nicked edges.

Large: 4. (Fig. 52,e,f.) Lengths: 10.2 to 15.2 cm. Widths: 4.8 to 6.3 cm. Thickness: 3.9 to 5.7 cm. Rounded edge, polished, sometimes nicked. Usually tapering form. One specimen with parallel edges near bitt. The large specimens of this type appear to be ritual pieces at Mayapan but were probably used as tools at Chichen Itza.

Re-used fragments: 2. Listed as "small hammerstones." Both apparently butt ends of large celts.

Not described: 10.

*SANDSTONE DISCS (Mirror backs): 10; 5 complete, 5 fragments

These discs were originally encrusted with pyrites or turquoise mosaics (see Morris, Charlot, and Morris, 1931, vol. 1, pp. 182-85 for full description). Diameters vary from 6.6 to 29 cm. Thickness, from 0.6 to 1.1 cm. No discs of this type were found at Mayapan. They seem clearly to be associated with the Toltec occupation.

JADE CARVINGS: 3

The jade carvings excavated from the ruins do not match in quality or in variety those dredged from the Sacrificial Cenote. The Carnegie catalog lists only three carved pendants, but additional examples were found in a cache in the lower Castillo in Mexican government excavations. Most of these jades are irregular pieces carved with the representation of a human head, stylistically characterized by low, circular earplugs and a round element over the forehead forming part of the headdress (Ruppert, 1943, fig. 35). A tubular drill was used in forming the earplugs and often in depicting the features of the face. The type is well known and is generally considered Late Classic or early post-Classic. The pieces found at Chichen Itza are very probably contemporary with its Toltec occupation. No pieces of similar workmanship have been found at Mayapan.

PENDANTS: 2

No. 427: Fragment of plaque, biconically perforated near one end. 9 by 5.5 cm. Small area of red pigment near one end. Material unidentified, possibly serpentine.

No. 1082: Greenstone? 1.8 by 1.2 cm. Rectangular; 2 perforations near one long edge.

STONE BEADS: 121

Limestone bead: Max. diam.: 2 cm. Ht.: 1.5 cm. Subspherical, with three lobes separated by grooves. Cylindrical perforation. (Cf. fig. 26,a.)

Jade beads: 120. These are not well enough described to be sorted, but they include tubular and subspherical forms, mostly of inferior jade, of irregular form and poor assemblage. Only three are described as having high polish, among them one of flat barrel-like form. One bead has five lobes separated by shallow grooves. Except for a larger proportion of plain tubular forms, the collection differs little from that of Mayapan.

MISCELLANEOUS SMALL OBJECTS OF FINE STONE: 23

Jade discs: 2. No. 1136: Greenstone (?); diam.(?): 1.5 cm; thickness: 0.4 cm; polished on one side only. No. 34-3: Diam.: 2.5 cm; thickness: 0.2 cm; highly polished on both faces; three perforations (Ruppert, 1943, fig. 35,3).

Small jade flare: 1.

Jade "buttons": 2. (Fig. 53,o.) Probably parts of earplug assemblage.

Miscellaneous jade fragments: 4.

Fragments of crystal and calcite: 5.

Iron pyrites: 8 cut fragments.

Pearl: perforated for suspension.

SUMMARY

The small dark celts from this site are identical to those of Mayapan and had been in use among the lowland Maya apparently from Classic times, since similar specimens also occur at Uaxactun. The larger celts from Mayapan, however, are aberrant ceremonial pieces, whereas at Chichen Itza and at Uaxactun they seem to have been used as tools.

Although there are few fine jades in the Chichen Itza collection, there is some indication of a contemporary jade carving style which was not observed at Mayapan. Jade discs, earplug flares, and "buttons" are probably survivals from the Classic period, but may still have been in use in Toltec times. Mosaic plaques and pyrite mirrors apparently disappear in Yucatan after the fall of Chichen Itza. They may have been used exclusively by the Toltec, although at Santa Rosa Xtampak they are reported from caches that appear to be associated with Classic period remains. Bits of calcite and quartz crystal had a ceremonial significance that not only goes back to Classic times but has even survived the Spanish Conquest (see Kidder, 1947, pp. 52-53).

Objects of Chipped Flint: 160

RITUAL FORMS: 6

Large leaf-shaped blades: 3. Two very fine flat blades, pointed at one end, were found under a mosaic plaque in the inner Castillo (Marquina, 1951, fot. 428), and another, smaller blade (fig. 52,i) is reported from the excavations of the Monjas. These blades are of finer workmanship than the large blades of Mayapan and of somewhat different form.

Point with round base (Fig. 52,j).

Sacrificial knives?: 2. (Fig. 52,m,n.) The "sacrificial knives" are represented in the excavations only by two inferior specimens, one of which is entirely atypical and may be a large spear point. There is some question, therefore, that the type goes back to Toltec times. The specimen most closely resembling Aztec forms was found in the Initial Series Group, where there is evidence of very late as well as early occupation.

LEAF-FORM BLADES AND POINTS: 3 and various fragments

The absence of the most typical Mayapan forms is notable and seems to be counterbalanced by a far greater number of stemmed points.

Blades pointed at both ends: 2. No. 791: 7.6 by 2.5 by 1.6 cm; gray chert with white patina (fig. 52,k). No. 792: 8.8 by 2.9 cm; rosy-gray translucent stone.

Long knives: No crudely made, slightly asymmetric knives of the type found at Mayapan have turned up at Chichen Itza, but there are a number of fragments of long blades of better workmanship and several blunt ends that indicate the presence of types not found among whole specimens.

Point with angle at base?: One doubtful broken specimen of "beeswax-colored" stone 4.8 by 2.8 cm.

TRIANGULAR POINTS: 2. (Fig. 52,bb,cc.)

Straight-sided keen points. Lengths: 4.5 and 3.6 cm. Both are humped on one face, and one is chipped on one face only and is made of ordinary chert. The other is of opaque brownish-gray chert with a pitlike fracture. The identity of the type to that of triangular points of Mayapan is somewhat uncertain, but in photographs the forms appear similar. (Cf. fig. 29,t,u.)

STEMMED SPEAR- AND DART-POINTS: 64?

Points with tapering stem: 17. (Fig. 51,i, center, and fig. 52,q,r.) These seem to fall roughly into two size groups: one from about 4.5 to 7 cm and another from 9 to 12 cm in length. Points vary in size and in material. The sides are usually gently curved, and there is a definite shoulder where the stem begins. One point, however, is almost leaf-shaped (fig. 52,q) and has a barely indicated stem. It comes from the Temple of the Four Lintels, a building of the Maya period. Points with tapering stems probably belong to both periods of construction at Chichen Itza. There are a few examples at Mayapan, which also may have survived from an earlier period. The general type is probably ancient in Yucatan.

*Points with triangular stem: 2. One is 9.3 cm, the other probably about 6.5 cm long. The smaller point (fig. 52,s) is from back dirt of the Sacrificial Cenote dredging.

*Point with wide straight stem (Fig. 52,t). The specimen is unique in the collection from the excavations, but the type is well represented in the material from the Sacrificial Cenote.

*Side-notched and corner-notched points: 27. (Fig. 52,u-x.) The normal form of these points is a sharp-angled isosceles triangle with very gently curving sides and two semicircular notches placed close to the base, forming a sharply expanding stem. The points are chipped on both faces and retouched on the edges. Most of them are of grayish translucent chert, but there are specimens of "honey-colored," "rosy-brown," and opaque gray flint as well as one of very fine brown opaque flint (fig. 52,x). In a common variation of the form, the side notches are lengthened, and one specimen of this type, made of yellowish translucent stone, is almost a replica of one found in an early level at Mayapan (cf. figs. 52,u and 30,f). Other variations include specimens with a rounded base, one with a slightly concave base, and another of red jasper made from a leaf-shaped blade, with the base narrower than the shoulder (fig. 52,w). In three examples, the notch approaches triangular form, forming an evenly expanding stem (fig. 52,v). Side-notched points are probably most typical of the Toltec period of Chichen Itza. Although they range in size from 5.2 to 9.2 cm, there is no sharp break in the sequence, which seems to lead continuously to the sizes proper for flake arrow points. The largest may have been used on javelins, and the intermediate sizes for darts thrown with an atlatl, the typical weapons of the Toltec depicted in sculpture.

Undescribed spear and dart points: 17?

ARROW POINTS, SIDE-NOTCHED, ROUND BASE: 2. (Fig. 52,dd,ee.)

Both are made of flakes partially chipped. They are similar to one of the varieties at Mayapan, except that one appears to be of finer flint. Locations unknown, but probably in surface deposits.

*HATCHET-FORM FLINTS: 2. (Fig. 52,y.)

One of white, opaque chert, 9.6 by 4.5 cm. Another of translucent buff chert, 5.7 by 2.7 cm. The form is narrower than at Mayapan, and whether it represents a distinct type is not certain. The typical Mayapan hatchet-form flint is entirely absent.

*ASYMMETRICAL KNIVES: 3

Two of the specimens, of ordinary flint, are edged on one side only (fig. 52,aa). The other is an irregular form of fine dark flint (fig. 52,z).

NARROW POINTED BLADE. (Fig. 52,p.)

Apparently of identical type exemplified at Mayapan by fragments in figure 32,q-s.

CHISEL? (Fig. 52,o.)

Apparently a tool similar to that in figure 32,t,u.

*CHOPPERS OR ADZES: 8. (Fig. 52,gg-ii.)

These are tools similar to the "chopping or general utility tools" from Uaxactun, described by Kidder (1947, p. 5). The working edge is rounded and in some specimens worn quite smooth. There is also a variation of this tool that has a straight edge and is somewhat shorter (fig. 52,ii). Such tools are found also in the Puuc, and some unusually fine specimens come from the Chetumal region (fig. 53,a-c). Nothing like them occurs at Mayapan, and the disappearance of this tool as well as of the large ground celt certainly seems to indicate a radical change in a basic technique, perhaps even more important than the change in weapons.

SCRAPER. (Fig. 51,i, left.)

Large flint scraper with spot of cortex.

MISCELLANEOUS FRAGMENTS: 27

Among these fragments are many points and several long blades. The descriptions of the stone are not always adequate to identify the flint, but there are at least six specimens of fine dark, opaque flint, some of them showing a characteristic pitlike fracture. We do not know whether the fragments are of pre-Toltec date, but the fact that a few of the notched points are made of this stone suggests that it was still available in Toltec times.

UNWORKED AND SLIGHTLY RETOUCHED CHIPS: 40, plus others unrecorded.

Two are of brown flint, the others of ordinary grayish translucent chert. A number of chips have nicked edges and were probably used as scrapers. Others show minor flaking.

SUMMARY

We have not enough data to make a detailed comparison of the flint industries of the two sites, but there are obvious and very striking differences in the forms used, though some types are common to both. The absence of "choppers" at Mayapan seems particularly important, especially if it is true, as Kidder suggests, that they were sometimes used for digging, for if we are right that, in the building trades, stone had become the preferred material, it is not likely that the reverse process took place in agricultural tools and that wooden tools were substituted for stone. It almost seems as if some basic agricultural technique had been changed or given up by the people. Weapons had also changed greatly at Mayapan, stemmed points remaining in use only for arrows, which were themselves an innovation. Whether the stemless points we find at Mayapan were used as weapons or as implements, we do not know, but nothing exactly corresponding to them appears in earlier cities. The small hatchet form is also entirely new and does not occur at Chichen Itza.

Obsidian Artifacts: 170

CHIPPED OBJECTS: 8

Point with round base: 1.

Points, side-notched: 2. (Cf. fig. 53,*f*, top row, right.) In form these are similar to some Mayapan arrowheads, but they are larger and are completely chipped on both faces.

Fragments of blades and points: 4. Two of these are fragments of blades of gray and black obsidian, 2.6 and 3.3 cm wide. The others are of bottle-green obsidian. One is apparently a broken point, the other a fragment 9.5 cm long of a blade 3.6 cm wide. It has a badly warped profile that may be the result of fire.

Small oval form: 3.5 by 1.5 by 0.8 cm. Chipped on both sides and with edges slightly retouched.

CORE: 1 fragment

FLAKE BLADES: 158 (probably others discarded)

Lancet type: 1. Length: 11.2 cm. Width: 1.1 cm. Pointed, with straight unused edges. Found in a crematory jar in the Caracol (Ruppert, 1935, p. 119).

*Notched flake blades: 2. Color not specified. Notched from both sides near butt. 1.5 and 1.0 cm wide.

Flake blade fragments: 133. Average width 1.23 cm. Color: gray, gray streaked with black, or unspecified. Striking platform not described. Very similar to blades of Mayapan but with a higher proportion of narrow blades with straight edges. These may be of green obsidian.

Green obsidian blades: 20. Average width: 0.95 cm. These blades tend to be narrower than the normal blades, somewhat thicker, and with straight parallel edges. The presence of so many in a small collection indicates a source of trade either more accessible to Chichen Itza or, what is more likely, a source cut off by the disturbed conditions of later times.

Opaque blue-gray obsidian, fragment of blade.

Broad flake: 1. 3.6 by 2.3 cm. Gray obsidian. Very thin, pointed.

UNDESCRIBED SPECIMENS: 3

SUMMARY

The chipping of obsidian to produce blades and points was evidently more common at Chichen Itza than at Mayapan. Pieces of green obsidian suggest closer contact with some highland area, possibly in Mexico, where green obsidian reaches a high ratio in later times.

Bone Objects: 26

AWLS: 5 fragments. Probably similar to those from Mayapan.

RASPS: 2 fragments of animal bone with crosscut grooves spaced about 0.5 cm apart.

CARVED TUBULAR BONE: 1. Crosscut at one end, broken at the other. Three perforations encircled by lines and two grooves at each end forming bands.

TOE BONE OF DEER?

MISCELLANEOUS FRAGMENTS: 15. Some showing cuts.

ANTLER: 2 points.

SUMMARY. We have very few bone objects from Chichen Itza, and the types represented all occur also at Mayapan. The absence of perforated teeth is notable.

Objects of Shell: 6203

SMALL CARVED HEAD (Fig. 53,q.)

BEADS: 5863

Assemblages: 3: 113 beads (Ruppert, 1943, p. 256); 5627 beads found scattered through the fill of the Caracol platform (Ruppert, fig. 37 and p. 35); 100 beads (Morris, Charlot, and Morris, 1931, vol. 1, p. 188).

Others: 23.

OTHER PERFORATED FORMS: 16

Pendants: 2. One thin, star-shaped cross section of shell with perforations (fig. 53,p). Pendant in form of jaguar tooth with perforation in root. Length: 6.4 cm.

Miscellaneous drilled forms: 14. (Fig. 53,w.)

SMALL DISCS AND RINGS: 6

Two discs, about 2 cm in diameter with small perforation in center. One of these is decorated with concentric groove and outer band of radial lines. A small ring 1.5 cm in diameter of thin nacreous shell. One small disc 1.3 cm in diameter. Two discs about 2.5 cm in diameter.

LARGE RINGS: 12

"Horse-collar": One fragment of band 3.7 cm wide.

*Wide rings: 7. (Fig. 51,h, upper row.) All but one probably of conch. Some showing natural striated surface. Max. diam.: 4.5 to 7.0 cm. Central hole: 0.8 to 2.2 cm. All but one have also a small drilled perforation about 0.5 to 1 cm from the edge.

Narrow rings: 4. Two of flat section, max. diam. 3.2 and 4.6 cm. Opening 1.7 and 2.6 cm. Two of thick section, approx. 0.7 and 0.9 cm, with a small perforation near edge.

LARGE DISCS: 5

Plain: 3, probably of conch. Diam.: 6.0, 6.5, and 8.0 cm.

Carved: 2 (Fig. 53,t).

INLAY FORMS: 8

Five rectangular; 1 curved rectangle; 1 oval; 1 oval, 4 cm long, with perforation in center 0.75 cm in diameter.

LONG, POINTED FORMS: 3. (Fig. 53,u,v.)

MISCELLANEOUS WORKED PIECES: 30

CONCH TRUMPETS: 5

Strombus, with cut spire, 7.7 to 19.5 cm in length.

SLIGHTLY ALTERED SHELLS: 194

Conch (Strombus?): 75. Many with cuts. Two sections cut from spire, one with grooves on cut surface, another with two perforations.

Spondylus: 11. Eight with perforations. Two of these perforated near base rather than near hinge.

Oliva: 77. Two unaltered, 8 with cut spire; 39 cut horizontally or broken with slit perforation near base; 5 with drilled perforation, 6 with two slit perforations, 5 with perforation near spire; 1 carved; 7 others.

Marginella: 1. Length: 0.4 cm. Perforated.

Various univalves: 15. Unidentified: 11. Conus: 7, 2 specimens with spire removed to shoulder, 2 with spire removed and slit perforation near base. Natica: 6, 1 of these cut at base, 2 with large round holes, 2 perforated. Small conchlike shell with 2 perforations (fig. 51,h, lower left).

Various bivalves: 5. Chama? (perforated), Cardium, etc.

MISCELLANEOUS FRAGMENTS and undescribed specimens: 60 (others discarded)

SUMMARY

The large number of shell artifacts recorded for Chichen Itza is mainly due to several assemblages of beads. These are mostly small discoidal beads of the same type we find at Mayapan. By and large, the two collections are very similar. Perhaps the most important difference is the absence of triangular pendants and of "nose plugs" (?) at Chichen Itza. Mayapan, on the other hand, lacks large wide rings and openwork carved discs. Openwork carving, however, was used on an Oliva shell (fig. 45,a) and the fact that the only decorated disc from this site is incised may not be significant. The shell-working industry as a whole seems to have been little affected by the advent or the passing of the Toltec and probably continued to be practiced in the coastal towns of Yucatan with only minor stylistic changes.

Objects of Metal: 6

WEDGE. Metal unspecified. Found in debris covering terrace of the West Annex of the Caracol.

NAIL HEAD: Metal unspecified; same location.

FISH HOOK (Fig. 53,r). Metal unspecified; same location.

COPPER POINTS: 2. (Fig. 53,k,m.) One of these points comes from material on the floor of the House of the Grinding Stones, Str. 3C5 (Ruppert, 1952, p. 39). The other was found at the base of an old field wall near the Temple of the Wall Panels. A similar point was found by Berlin at Atasta, Campeche (CR 7, p. 121). It is not known whether these points are pre-Columbian, but all occur in locations suggesting that they are very late.

COPPER RING. About 1.9 cm in diameter, 1.8 cm wide. Found in debris along lower terrace of the Temple of the Wall Panels.

COPPER BELLS. None are listed in the catalog of the Carnegie Institution, but Thompson reports their association with burials in the shaft of the High Priest's Grave and in a small burial mound in front of it (E. H. Thompson, 1938; and Ruppert, 1952, p. 163). In the shaft was also found pottery judged to be of Mayapan date, permitting the inference that the bells were deposited after the destruction of the city.

Objects of Pottery: 183 (exclusive of vessels)

*SPINDLE WHORLS: 151(?) (Fig. 51,j). The spindle whorls of Chichen Itza have been studied and described by Kidder (1943). The "cupcake" form which seems to predominate at Mayapan and its environs is less frequent here than a discoidal one of oval section. The problem of dating these spindle whorls has not been solved, but five (fig. 51,j) recently found in deposits containing no pottery later than that associated with Toltec construction definitely show that both forms were in use in pre-Mayapan times. Four of the specimens are discoidal, and all, according to R. E. Smith, can be classed with Slate wares.

*CHILE GRINDERS OR PESTLES: 15. These also are more numerous than at Mayapan, where only one example is known. The conventional form of the curved pottery pestle with a crudely modeled animal head at one end is the same at both sites, although there may be minor differences in paste and style. Probably the form is essentially one of the Toltec period.

POTTERY BEADS: 2. Fine-grained pinkish pottery. Spherical. 1.9 cm diam. Cylindrical holes 4 mm diam. made before firing.

POTTERY DISCS: 15. Undoubtedly many worked potsherds were not separated from the general ceramic collection. Most of the forms recorded are discoidal, and some may be pot lids. Measurements are available for only a few, with diameters ranging from 1.8 to 6.4 cm. One piece is said to be drilled and "worked into a pendant," but no partially drilled forms or forms with grooved edges are described. Slate ware is mentioned as one of the materials, but descriptions of most pieces are too general to place them in specific pottery wares.

NOTES ON MATERIAL FROM THE SACRIFICIAL CENOTE OF CHICHEN ITZA

This very fine collection of artifacts, now at the Peabody Museum of Harvard University, deserves thorough study. A report on the metals has been published by Lothrop (1952), and it is anticipated that artifacts of other materials will be published by the Museum at some future date. One can hardly avoid mention here, however, of some striking differences between this collection and the objects so far recovered from the excavations in those ruins, differences not adequately explained by the ceremonial nature of the Cenote deposits. Dr. A. M. Tozzer, in his monumental work on the Cenote (1957), has relied on Brainerd's observations that most of the ceremonial pottery from the Cenote postdates the ruins (Brainerd, 1958, pp. 44, 45) to propose a theory of a very late development of the Cenote Cult. Some features of the artifact collection seem to support this view; others, however, contradict it. The following brief comments, based on a very cursory examination of some of the objects in the Museum, can do no more than point out certain factors that bear on the relation of the Cenote Cult to the two cities.

Among the objects dredged from the Cenote were many of metal that have no counterparts in the catalog of the Carnegie Institution's excavations. There are several varieties of copper bells (Lothrop, 1952, pp. 83-93), of which types A, A_1, B, and C are similar to the varieties we find at Mayapan. A number of finger rings are also similar to specimens from Mayapan excavations. The bells found with burials in the shaft of the High Priest's Grave at Chichen Itza (E. H. Thompson, 1938) occur in association with small Redware bowls that very probably postdate the ruins and are contemporary with the finds at Mayapan. The fact that no copper objects have been found under constructions at Chichen Itza, or even in such association with buildings of the Toltec style as would suggest their contemporaneity, conflicts with Lothrop's statement that "the Cenote material yielded short count evidence that the Tula-Toltec exported copper bells from Mexico to Yucatan before 1000 A.D." On the other hand, Garcia Payon (1941, p. 352) found bells in association with obsidian tubes at Texmelincan Guerrero, which is apparently a Toltec site of early post-Classic date. Copper bells have been found in association with Tohil Plumbate pottery in various locations, and, if our present correlation of the Toltec Period at Chichen Itza with the Tohil Plumbate horizon is correct, they must have been manufactured at this time and may have come into the possession of the Toltec. That they were actually traded into Yucatan, however, remains to be demonstrated, and the fact that no metal has been reported from Tula should make us hesitate to attribute its introduction to the Toltec. It seems more likely that trade in copper reached significant proportions principally under the rule of Mayapan and that before its establishment the possession of copper objects was exceptional or at best rare. The fact that no wirework bells were found at Mayapan strongly suggests that such bells from the Cenote are even later. However, these bells were manufactured in Mexico, and their failure to show up in Mayapan may be due to an interruption of direct trade with the highlands, for which we have already adduced some evidence. If we were certain that other bells came into Mayapan from Mexico, the evidence for the lateness of the wirework variety would be much stronger.

The comparison of flint implements found in the Cenote and in excavations precludes the view that the entire collection, or even the bulk of it, postdates the Toltec period. In view of the evidence of the pottery and metals linking the Cenote material with that of Mayapan, it is somewhat surprising that all the numerous projectile points recovered from the Cenote seem to be of earlier types. The sharp, stemless points of Mayapan and the small flake arrowheads chipped only on the edges are absent from the Cenote remains. It might be argued that such weapons were not connected with the rites of sacrifice were it not for the fact that stemmed spearheads and dart points are in contrast very numerous and do not differ essentially from points found in excavations of Toltec buildings. It seems incredible that the people of Chichen Itza could maintain a complex of weapons entirely different from those of Mayapan throughout the period of Mayapan's domination, and we must conclude that the bulk of this material was deposited during the hegemony of Chichen Itza or immediately after its destruction.

The projectile points from the Cenote include side-notched and corner-notched forms, a type with a serrated stem, and various forms with tapering stems (fig. 53,f). In addition there is a set of 24 or more very flat, beautifully retouched dart points, less than half a centimeter thick, which have a broad, almost straight-sided stem (fig. 53,f, lower left). This set and many of the other points are made of a milky translucent chert, but others are of opaque compact stone having a pitlike fracture and characteristically brown or very dark gray. A number of very flat points are made of a light gray stone that looks somewhat like slate (fig. 53,f, upper left). In size these points have a range approximating that of the Institution's collection, and the smallest are only slightly heavier than Mayapan arrowheads. No pieces that can clearly be classed in the category of arrowheads were observed, however, and the majority were probably for darts thrown with an atlatl. Many of the specimens still retain traces of gum with which they were fastened to the shaft, as if the darts were thrown in entire. Wooden spear throwers are also present, and the curious curved sticks that one sees depicted on sculptures of Toltec warriors. The explanation of the presence of so many Toltec weapons may, of course, lie in the changing character of the rites through successive periods. The deposit of flints suggests that arms in large numbers were simultaneously thrown into the water, and this practice may be unrelated to the rites of a later "Cenote Cult." The whole problem, however, needs further study, since the mere comparison of types found at Mayapan with those of Chichen Itza is not sufficient to establish their chronology, and at present we still know very little about their distribution in the rest of the peninsula.

Among obsidian objects from the Cenote there are the usual flake blades of gray and black obsidian, at least two fragments of chipped points, and a small knife chipped from a flake blade of green obsidian. In addition, there are fragments of two beads, one of them of carved tubular form, and several fragments and one complete specimen (fig. 53,j) of spirally grooved obsidian tubes such as were found in a Qankyak grave in Zaculeu (Woodbury and Trik, 1953, p. 241) and at Texmelincan (Garcia Payon, 1941, p. 353), which was a Toltec site. Several of these tubes are of black and red obsidian, extremely rare in Yucatan. The Zaculeu specimens were associated with Tohil Plumbate pottery, and the presumption is that the Chichen Itza specimens are of Toltec period date. None, however, are reported from excavations.

The famous collection of jades recovered from the Cenote contains pieces of Classic and later periods, of several distinctive styles and of widely different workmanship. It is probably the most comprehensive single collection recovered in Mesoamerica. There are Classic Maya pieces of inferior stone but of superb artistry, brilliant green jades from Mexico worked with figures in sharp bas-relief, imported pieces from various lands, and countless beads and small objects that testify to the wealth and variety of the lapidary crafts in aboriginal times. Unfortunately they tell us little about the date of their deposition, for such precious objects were often handed down through generations before they were sacrificed to the gods, and there is no way now to reconstruct their complicated individual histories.

The humbler objects of home manufacture, such as manos and hammerstones, and the products of the minor industries of shell and bone working, are less well represented in the Cenote collection than in collections from the ruins, and probably have little bearing on the practice of the cult of sacrifice. We cannot know, however, until all this material is studied what it may reveal, and how much of it can be attributed to periods subsequent to the occupation of the city by the Toltec. We can only hope that the final study of all the objects from the Cenote will not be too long postponed.

NOTES ON ARTIFACTS FROM THE PUUC REGION

Although very few metates and manos from this area have been described, we have enough data to conjecture that these utensils did not change very much in post-Classic times until the introduction of tripod forms. The common metates of the Puuc were probably legless, and ground to a trough by blunt-ended manos identical to those we find at Mayapan. The metates I have recently observed at Dzibilchaltun, however, are much deeper than those of Mayapan and retain a rim all around. Some are almost as deep as the "trough" in figure 8,p. A mano recovered from the Cave of Loltun (Mercer, 1896, fig. 49) not only is similar in shape to specimens from Mayapan but also has the peculiar pit that sometimes occurs on such manos. The Peabody Museum of Harvard collection from Labna, in addition to blunt-ended manos, has several that are circular in section, tapering slightly toward flat ends. These are somewhat longer and not as well made as the "cigar-shaped" manos of Mayapan, and it is possible that they are merely unused specimens of the "knob-ended" forms used with modern tripod metates.

Plaster-smoothing stones have not been observed in collections from the Puuc, but there are a number of amorphous stones with smoothly rubbed facets. Spherical hammerstones occur, but we cannot judge how frequently. More common, seemingly, are round, roughly chipped pieces of chert evidently used as pecking stones. They measure about 7 or 8 cm in diameter, and they are roughly oval in section and about 4 cm thick. The edges in most pieces appear to be rounded by pounding, but one specimen from Kabah, listed in the Carnegie Institution catalog, seems to have a cleanly chipped edge and is described as a "chopper." When broken, these tools are often difficult to distinguish from ends of crude choppers, but three whole specimens from Labna in the Peabody Museum's collection clearly show edges worn by pounding or pecking, which are much too evenly rounded to have been useful for chopping. In figure 14,f is a similar stone from Mayapan, somewhat less regular in form than the specimens from the Puuc. The Harvard collection also contains a cylindrical hammerstone of limestone from Labna. It is evenly rounded and pecked at the ends, and is very similar to Mayapan specimens.

"Pot lids" are not reported from the Puuc, but bark beaters, particularly of the flat, oval, very evenly scored variety, occur frequently. Less common are the rounded, roughly scored bark beaters that are in the majority at Mayapan. We have no data to indicate whether these two varieties are functional, or whether the less well made types became more common as time went on.

Among miscellaneous limestone objects was noted a flattish piece about 3.5 by 4.0 cm with two biconically drilled holes. It is similar to the specimen in figure 20,k.

That alabaster or marble vessels were present in the Puuc before the Toltec period is attested by 30 fragments from Uxmal representing at least 9 different vessels. One fragment (fig. 51,e), incised in the Classic style, shows the arm of a warrior holding a decorated round shield. Bits of featherwork and a wristlet of characteristic design identify the warrior as a Maya, and the naturalism of the representation suggests a date for this carving within the Classic period. The rims of the vessels usually have a small projecting fillet, and the sides are either rounded or straight and almost perpendicular to the rim, suggesting deep bowl or cylindrical forms. Marble and alabaster vessels are generally associated with the Tohil Plumbate horizon and with early post-Classic remains, but perhaps a somewhat earlier date for them is possible in view of these finds.

On implements of imported stone and on jades and other fine objects from the Puuc we have very few data, for not many caches have been uncovered.

Ground celts, both large and small, occur in local collections, but the date and provenience of the pieces are uncertain. Small jade earplug flares and beads are also present and probably are mostly of Classic date.

In flints, fortunately, scarce as well documented material is, we have enough to make some preliminary observations. It is fairly clear that the thick, heavy celtlike forms already discussed in connection with Chichen Itza (fig. 53,a-e) represent common implements in the Puuc. The variety that has a rounded, polished end is particularly frequent in collections from Puuc sites. The material of which these tools are made varies, and may or may not be chronologically significant. Thinner, finely chipped, large blades probably represent cache material and are invariably better chipped than those found at Mayapan. Projectile points are nearly all of the tapering stem variety and generally larger and heavier than the dart points found at Chichen Itza. They also are made of various flints, but very often include compact opaque flints of different shades of brown. The Carnegie Institution catalog lists 12 such points from pottery trenches made at Uxmal. Unfortunately the material of these specimens is not described. At least one is of red jasper, and another has a deeply pitted surface characteristic of the finer flints. The only two whole specimens measure 7.5 and 13.6 cm in length, and the fragments seem to indicate that this is the approximate size range of the others. The collection contains no side-notched points and no arrow points, but is too small to exclude the possibility of their occurrence elsewhere.

The Peabody Museum collection from Labna chultuns is of similar character. It contains, however, at least one side-notched point, made from a leaf-shaped blade so that the base is narrower than the middle. The point is of fine light-colored flint and measures 9.5 by 3.7 by 0.8 cm.

Although the evidence from the Puuc is meager, we may tentatively conclude that the basic complex of flint tools was carried over from Classic to Toltec times, but changed radically with the foundation at Mayapan. New weapons, however, were introduced by the Toltec, specifically small darts thrown with an atlatl and tipped with side-notched points of flint or obsidian. Apparently such darts were later superseded by the bow and arrow, but whether before or after the foundation of Mayapan we are not certain. Certainly the character of the dart points had changed before the building of the ceremonial constructions at Mayapan, although traditionally the atlatl continued to be used until the time when the Cocom ruler of Mayapan made use of Mexican soldiers from Tabasco, armed with the bow and arrow.

SUMMARY REMARKS

There is every reason to believe that the fall of Chichen Itza occasioned a period of disorganization and unrest in Yucatan, bringing about cultural changes even more profound than those directly attributable to the Toltec invasion. With the establishment of Mayapan, conditions were stabilized to a degree and doubtless normal contact with adjacent regions was resumed, but in the meantime such important industries as the making of pottery and the working of flint had apparently suffered a drastic decline. Not all activities were equally affected. Products of home manufacture, such as manos and metates, remained substantially the same. Traditional forms were still produced in bone and shell. Awls, needles, and bodkins of deer bone, rasps, antler points, and many other bone objects can be duplicated in earlier collections. Shell beads and pendants, conch trumpets, discs, rings, perforated ornaments of all kinds, and inlay pieces show no changes from those of previous periods, or none that we can now detect. Possibly some specific forms, such as that of the triangular pendant, were characteristic of the time, but by and large the products of the shell-working craft show no basic changes in technique or design. The only possibly significant item is the absence of large scoops that sometimes occur in Classic sites (fig. 53,x,y). Perhaps the violent events that preceded the political reorganization of the peninsula did not greatly affect the life of coastal villages where such products were made, or disrupt the local coastal traffic.

Other aspects of culture, however, were drastically affected by the disturbed conditions. Probably one of the most fundamental changes was the decline of homogeneous religion controlled by an established priesthood. The result was a coexistence of various cults and practices, the worship of many deities, and a more intensive development of private ceremonial. Thus, at Mayapan, although stelae were still being erected according to ancient Maya custom, evidence of ceremonial activity is mainly centered on numerous small shrines, both public and private, containing idols of stone or stucco and remains of many god-effigy incense burners. It is probably this practice that is alluded to by native historians as "idolatry" and is specifically attributed to Kukulcan, the founder of the city. Actually, however, it seems to have originated in the cities on the east coast of Yucatan, where small shrines are very common and where they may date back to an earlier period.

In connection with shrine worship there appear small "altar figures" carved in limestone. Although characteristic of the new ritual, they may arise locally, for there is no mention of such figures from the east coast. They are used in fine residences as well as in colonnaded halls and temples, and it is probably a fact worth noting at the outset that, at Mayapan, there is no essential difference between the ceremonial equipment of temples and that of shrines located in private houses, except as it applies to the humbler dwellings. The shrines of the rich were at least as opulently furnished as any found in the ceremonial district of the city.

The practice of burying ritual offerings, common to most Middle American religions, was observed also at Mayapan, but with decided peculiarities of content and location that reflect changes in attitude to religious observance. Objects specifically made for such deposits are very rare. Only one cache found by Adams in the circular structure Q-84, and very probably originally placed under a stela or some other monument, was made in the traditional manner of the ancient Maya religion. It consists of two Mayapan Redware bowls, several eccentric flints, and one excellently chipped large obsidian blade (figs. 27,c,d; 35,a). A cache of two flint blades occurs in the round structure Q-126, but this, too, is somewhat unusual.

The normal practice at Mayapan was to place a small effigy bowl or tripod cup (usually unslipped, and painted after firing) in a shallow cist under the floor immediately in front of, or inside, an altar. Other locations were sometimes chosen, but deeply buried caches are extremely rare. The vessels usually contain several jade or shell beads, often not more than two, and occasionally some ashes or animal bones. They seem to have been mainly offerings of food or of small sacrificed creatures, with the beads serving as symbols, for they could hardly have had much intrinsic value. Another type of offering consists of one or several sharply pointed obsidian flake blades or of sting ray spines. These were used for blood-letting rites and were sometimes deposited in turtle effigies of pottery or stone.

More elaborate caches include jade pebbles, bits of rock crystal, and in one cache, arrow points. Several times tiny fragments of gold have been found in a broken area of flooring from which a cache had been taken out in ancient times. The reclaim of such caches was common practice when structures were being rebuilt, and in almost all buildings that show signs of violent destruction there are small excavations where caches had been removed before the roof of the building collapsed. Evidently the ritual purpose of these deposits was mixed with practical aims which, once served, made further sacrifice pointless; but, however we may interpret the religious implications of the shallow placement and the recovery of such offerings, there is surely a significant difference between this practice and the permanent burial of objects of beauty and value that was customary in Classic times.

Burials at Mayapan were likewise often reopened and disturbed, but probably because of the lack of space in family tombs and the necessity of successive interments. Mortuary furniture, never elaborate, consisted mainly of pottery vessels probably containing food offerings. Objects of personal adornment, however, were sometimes retained, and sometimes tools and weapons were buried with their owner. Graves have furnished us with most of the objects of metal and bone that have survived. Cremation may have been practiced by the ruling families, though actual evidences of it are few. A sealed crematory jar containing ashes, a few human bones and teeth, and a jaguar-tooth pendant (CR 25, p. 236) described by Thompson and Thompson, is an exceptional find, but ashes may have been retained in wooden statues, as Landa describes. A perforated frontal portion of a skull previously found at Mayapan suggests the custom that he attributes to the Cocom of modeling a portrait mask of the deceased on the foundation of the bones.

Bodies buried in ceremonial constructions are probably those of sacrificial victims or of the condemned, for they occur most often in narrow cists or shafts into which they are crammed in numbers and without accompanying offerings. One unusual shallow burial of several individuals described by Adams (CR 9, p. 145) contained flint points or knives, so placed as to suggest that they had been used to kill the victims.

It is probably in consequence of these various practices that objects specifically designed for ritual purposes are so rare in the Mayapan collection. The bulk of material consists of common tools and of articles of personal adornment. The great majority of the tools are made of local limestone and chert, and many are crude and unstandardized in form. Among traditional forms are bark beaters, including two very well made pieces probably surviving from an earlier period. A bark beater, probably locally made, from an early deposit of Mayapan is similar in form, with flat faces, but less accurately scored. A form with convex faces and crude grooving may represent a later type. Subspherical stones occur in great numbers, and there are several subcylindrical hammerstones and miscellaneous pounding tools. The grooved hammer that was used at Chichen Itza, however, occurs only as an exceptional specimen. There is a great variety of forms in stones used for rubbing and abrading. Plaster-smoothing stones are numerous and often are merely manos, bark beaters, or other re-used tools. Finer pebbles of limestone showing abrading facets were probably used for polishing pottery. Although earlier sites do not exhibit such a range of rubbing and abrading implements, the Mayapan collection does not involve any new specialized forms. The only article of limestone that is unreported from earlier sites is the common "pot lid," a crudely chipped disc sometimes found covering vessels or cache cists. It is not found in the earliest Mayapan deposits and may be late even here. With this exception, the forms we find at Mayapan represent mainly an adaptation of traditional forms to various uses. It has been suggested that wooden implements were formerly used for smoothing plaster, which seems to be a common purpose of many of the implements in the collection.

In contrast, the industry producing chipped flint implements shows radical and important changes. The workmanship of the tools from Mayapan is distinctly inferior to that of tools from earlier sites, owing in part to the general decline of craftsmanship that characterizes the Mayapan period but in part to the nature of the material used, a chert, probably local, which is often grainy or flawed, and which lacks the fine, clear fracture of darker flints available in earlier times. A study of the distribution of various kinds of flint in Yucatan might, therefore, throw considerable light on what happened during this period. At present we do not know the source of the finer materials.

Another very important change in the flint-working complex is the disappearance of heavy celtlike forms. These implements, particularly a variety with a rounded polished edge, occur in almost all lowland Maya collections, both from the Peten and from Yucatan (fig. 53,a-e). If, as has been suggested, they were used for digging or cultivation, the shallowness of the soil at Mayapan may be a reason for their absence here. However, it seems unlikely that not a single specimen would be found had they been in use elsewhere in the peninsula. It is more reasonable to infer a significant change in cultivating technique, which may have to be taken into consideration in discussing the economic conditions of the past.

The flint tools of Mayapan include many forms found elsewhere, but the most common forms fall in the category of simple leaf-shaped blades and points, so variable that it is difficult to distinguish functional varieties even so general as those of tools and weapons. There is a tendency for these blades to be broad near one end, some approaching the form of the Aztec "sacrificial knife." These grade imperceptibly, however, on the one hand, into sharp points probably used for lances or darts, and, on the other hand, into rude long knives that were doubtless utilitarian implements. The rarity both of tapered-stemmed points characteristic of Puuc-region collections and of side-notched forms common at Chichen Itza points to a definite change in the form of weapons and in the technique of war. The side-notched form appears at Mayapan only in tiny arrowheads made from thin, narrow flakes of flint and of obsidian, retouched on the edges. The conclusion can hardly be escaped that the incidence of these points reflects the introduction of the bow and arrow into Yucatan, which traditionally is attributed to Mexican mercenaries brought in by the ruler of Mayapan from a garrison stationed at Xicalango, Campeche. Similar arrowheads have been reported both from the coast of Veracruz and from Honduras, but the distribution of specific forms is not yet so well known that we can confirm the historical fact archaeologically. It may be of interest that there are differences between flint and obsidian forms of arrowheads, and that the obsidian points are concentrated near the ceremonial center and seldom occur in house-mound finds.

Another form peculiar to Mayapan and occurring only in late deposits is one that resembles a small chipped hatchet bitt. I have been unable to find references to this form elsewhere, but one specimen is reported from El Meco, on the east coast of Yucatan, and another, somewhat larger than most, is said to have come from the region of Chetumal (fig. 53,g). It is probable, therefore, that this form was introduced with other east-coast traits which permeated the culture of Mayapan at this time.

Unlike flint, obsidian had to be imported into Mayapan. A considerable number of raw chips, some with spots of cortex, suggests that it was imported as raw material. It was used mainly for the manufacture of flake blades, from which in turn were fashioned small arrowheads and tiny scrapers. Some pieces may have been used for inlay, and a few scrapers were made from large core chips, but there is only one example of a large chipped blade, already mentioned in connection with caches. Bifacial chipping of sizable points was evidently not practiced. The cores and blades are on the average smaller than those usually found in highland regions, and every core but one, as well as all the flake blades examined, showed a cortical or artificially grained striking platform. The fact that green obsidian occurs only as a trace in the collection and that the red-streaked variety is entirely absent argues against highland Mexico as a source of the stone. Both varieties are present in small amounts at Chichen Itza, which suggests that formerly there was closer communication between the two areas, and that direct trade had been interrupted. Highland Guatemala is a possible source of the stone used at Mayapan, but the fact that no chipped implements were imported from this region makes it very unlikely that it was reached directly by trade routes from Yucatan. Presumably the foreign trade of Mayapan proceeded largely by coastwise routes, overland travel reaching only the region of Acalan on the west coast and Chetumal on the east. Both these coastal regions may have received products from the interior, and expeditions by canoe probably visited other, more distant ports of Honduras and Veracruz, which were in contact with the highlands.

Other important items that Mayapan acquired through such trade were small celts of jade or jade-like stone and objects of copper and gold. Occasionally the inhabitants picked up jade beads and pendants, but there is no evidence that they traded with any specific jade-working center. The finer jades reached them only in the form of tiny fragments, and the carved pieces recovered are miscellaneous in workmanship, some undoubtedly being antiquities in Mayapan times.

Trade in metals, which apparently began earlier, was continued and expanded under the hegemony of Mayapan. We know that the Toltec obtained gold discs, probably from the south, and decorated them with scenes of their conquests. It remains a question, however, whether they also imported copper. The representation of bells on one of the discs is accepted by Lothrop as conclusive evidence that they did, but the fact still lacks archaeological confirmation. Many of the copper specimens from the Cenote are very like those from Mayapan, and those that are conspicuously different, such as wirework and effigy bells, appear to be of later manufacture.

Sheet gold was not found at Mayapan, but Root's analyses of a fragment of very thin foil and several pieces of tumbaga gilded by mise-en-couleur point to a southern origin for these pieces. Copper objects from Mayapan, on the other hand, more often resemble known specimens from Oaxaca, and Root mentions Mexico, Honduras, and Chiapas as other possible sources. The objects include bells, finger rings, tweezers of various design, and a copper chisel. The little that we know at present about the distribution of styles, ores, and techniques does not permit us to state their place of manufacture, but their variety is such that they may well come from several different regions, and it is very likely that they were obtained at second hand by the normal trade with coastal cities, both east and west of the peninsula.

We can hardly consider as articles of regular trade the heavy tools of volcanic and igneous stone that occasionally were used at Mayapan. For this very reason, however, their presence is better evidence of direct contact with some highland area than the presence of items regularly exchanged. One type of lava metate we found was later imitated in limestone, and in colonial times its form became standard everywhere in Yucatan. Neither this nor other forms of lava metates recovered occur in published collections from Mexico or Guatemala. Conceivably they could be late forms that have escaped observation, but it is more likely that the region from which they came is peripheral to the known highland areas and remains unexplored. It is also not yet determined whether the use of the tripod metate is in any way related to the spread of round-ended (apsidal) house form in Yucatan. Both apparently become common in the colonial period, and almost nothing is known bearing upon their origins.

The introduction of steel tools and the complete destruction of trade occasioned by the Spanish Conquest quickly supplanted and disposed of the native implements, formerly based largely on stone-working techniques. The period between the fall of Mayapan and the Conquest remains unknown. It was a relatively short period, however, and, though it may have further impoverished the artifact complex and the techniques current in Yucatan by the destruction of established trade relations, it could hardly have added any new inventions or allowed for the introduction of new forms, with the possible exception of the limestone tripod metate, which seems to have been made at Chichen Itza in immediately pre-Conquest times. For practical purposes, the artifact complex of Mayapan can be taken to represent the final stage of aboriginal culture in Yucatan. I trust that, however scanty are the conclusions that can be drawn from the material at present, the description of the objects themselves will prove useful to students who in the future will be dealing with the history of the economic, technical, and commercial aspects of Maya culture.

APPENDIX

List of Lots Cited in Current Reports

(Carnegie Institution of Washington, Department of Archaeology, 1952-56)

A: Mayapan houses

A-1 to A-17: CR 4
A-21, A-22: CR 4
A-27 to A-38: CR 4
A-41 to A-55: CR 10
A-57 to A-60: CR 10
A-62 to A-83: CR 10
A-86 to A-91: CR 17
A-114, A-115: CR 17
A-118 to A-127: CR 17
A-130: CR 29
A-131, A-132: CR 15
A-133: CR 29
A-134 to A-142: CR 17
A-144 to A-149: CR 17
A-151 to A-195: CR 29
A-201 to A-243: CR 29
A-250 to A-269: CR 33
A-440 to A-451: CR 33
A-500 to A-588: CR 36
A-590 to A-595: CR 36

B: Mayapan, city wall

B-1 to B-5: CR 2

C: Mayapan, ceremonial precincts

C-2 to C-4: CR 11
C-6 to C-14: CR 9
C-15 to C-21: CR 14
C-22 to C-28: CR 9
C-29 to C-34: CR 14
C-35: CR 22
C-36 to C-49: CR 9
C-50 to C-53: CR 8
C-58, C-59: CR 22
C-61 to C-65: CR 20
C-66: CR 32
C-67 to C-69: CR 30
C-70 to C-73: CR 31
C-74 to C-76: CR 16
C-84 to C-94: CR 22
C-95 to C-99: CR 32
C-101, C-102: CR 32
C-104 to C-108: CR 22
C-109, C-110: CR 27
C-114, C-115: CR 28
C-116: CR 34
C-120: CR 28
C-122: CR 34
C-123: CR 28
C-124 to C-126: CR 34
C-129 to C-132: CR 34
C-134 to C-137: CR 34
C-139 to C-143: CR 37

D: Mayapan cenotes, caves, sinkholes

D-2 to D-20: CR 5
D-28 to D-49: CR 12
D-51 to D-69: CR 12
D-70 to D-72: CR 12
D-74 to D-76: CR 12
D-78 to D-88: CR 12

E: Sites in the vicinity of Mayapan

E-37: CR 39
E-108: CR 39
E-110: CR 39
E-121: CR 39
E-154, E-155: CR 39
E-184: CR 39
E-500 to E-507: CR 39

List of Lots Not Cited in Current Reports

(References contain data on relevant structures.)

A: Mayapan, houses

A General surface collection.
A-18: Str. J-49b. Extension northward of A-11 to a retaining wall. (CR 4.)
A-19: Str. J-49b. Extension northward of A-11 between retaining wall and terrace wall. (CR 4.)
A-20: Str. J-49b. Extension northward of A-6 (surface material about 0.50 m deep) over trench. (CR 4.)
A-23: Str. Z-8b. Below monkey sculptures on mound.
A-24: Str. Z-188. Surface, from platform to modern wall. (CR 3?)
A-25: Str. J-131a. Surface debris. (CR 4.)
A-26: Str. K-20b. From fill of platform covered by flat stone.
A-39: Stone circle 10 m northwest of Str. K-44a. Earth fill inside and around base of stones. (CR 3.)
A-40: Str. Q-119a. Surface debris. (CR 10.)
A-56: Str. K-52c. Surface debris. (CR 10.)
A-61: Group K-52. Trench east of main platform. (CR 10.)
A-84: Str. I-67a. Surface to bedrock off edge of substructure. (CR 13.)
A-85: Str. DD8a. Within and around small enclosure at southeast corner of terrace. (CR 3.)
A-92: Str. AA-57a. Surface, on mound. (CR 17.)
A-93: Str. Z-57. Surface, on mound.
A-94: Str. Z-74a. Surface, back room. (CR 17.)
A-95: Str. Q-208. On and above floor of front room. (CR 19.)
A-96: Str. Y-26b. Surface, on mound. (CR 17.)
A-97: Str. Q-208. Surface and debris at north base of platform and on steps. (CR 19.)
A-98: Str. Y-56. Surface, on mound.
A-99: Str. Q-208. Under floor of upper structure. (CR 19.)
A-100: Str. Q-208. On and above floor in and near east room. (CR 19.)
A-101: Str. Q-208. Surface and debris outside southwest corner, to depth of 20 cm at southwest edge. (CR 19
A-102: Str. Q-208. At depth of 20-45 cm, south half of same cut. (CR 19.)
A-103: Str. Q-208. At depth of 20-45 cm, north half of same cut. (CR 19.)
A-104: Str. Y-92a. Surface, back room. (CR 17.)
A-105: Str. Q-208 sub. In fill of altar, back center room. (CR 19.)
A-106: Str. Q-208. Trench at southwest corner at depth of 40-70 cm. (CR 19.)
A-107: Str. Q-208. Inside central bench of front room. (CR 19.)
A-108: Str. Q-208 sub. Inside step to bench of back room. (CR 19.)
A-109: Str. Q-208. Trench at southwest corner. Under Lot A-106 to bedrock. (CR 19.)
A-110: Str. Q-208 sub. Inside and under east bench. (CR 19.)
A-111: Str. Q-209. Surface debris. (CR 19.)
A-112: Str. Q-208a. Surface debris. (CR 19.)
A-113: Str. Q-209. Fill under floor. (CR 19.)
A-116: Str. Q-208a. Under surface debris. (CR 19.)
A-117: Str. Q-210. Surface debris.
A-128: Str. Q-207. Surface debris mixed with some material under floors. (CR 19.)
A-129: Str. Q-207. Under floor levels. (CR 19.)
A-143: Str. R-89. Debris in areaway. Included in Lot 130. (CR 29.)
A-150: Str. Q-231c. Surface debris. (YB 53, p. 277.)
A-196 to A-200: Not used.
A-244 to A-249: Not used.
A-270 to A-399: Not used.
A-400: Str. Q-170. Surface debris outside. (CR 25.)
A-401: Str. Q-172. Surface debris outside. (CR 25.)
A-402: Str. Q-172. South room, on floor and in debris. (CR 25.)
A-403: Str. Q-169. Surface debris outside. (CR 25.)
A-404: Str. Q-171. Surface debris outside. (CR 25.)
A-405: Str. Q-172. Placed with Lot A-401. (CR 25.)
A-406: Str. Q-172. Room A, surface debris. (CR 25.)
A-407: Str. Q-169. Debris on plaza floor. (CR 25.)

A-408: Str. Q-169. Room A, surface debris. (CR 25.)
A-409: Str. Q-169. West room, surface debris. (CR 25.)
A-410: Str. Q-173. Surface debris. (CR 25.)
A-411: Str. Q-169. Outside southeast corner of buried structure, sealed by later addition. (CR 25.)
A-412: Str. Q-170. Under floor. (CR 25.)
A-413: Str. Q-172. Room A, mortuary cist. (CR 25.)
A-414: Str. Q-169. Rear room, under floor. (CR 25.)
A-415: Str. Q-172. Room A, under altar. (CR 25.)
A-416: Str. Q-172. Under plinth on central axis. (CR 25.)
A-417: Str. Q-169. Under plinth on central axis. (CR. 25.)
A-418: Str. Q-169. Tomb on central axis. (CR 25.)
A-419: Str. Q-172. Room A, behind addition to altar. (CR 25.)
A-420: Str. Q-172. Room B, under floor. (CR 25.)
A-421: Str. Q-169. Sealed deposit under tomb. (CR 25.)
A-422: Str. Q-169. West and rear west rooms, under floor (equivalent to Lot A-414). (CR 25.)
A-423: Str. Q-172. Room B, inside north bench. (CR 25.)
A-424: Str. Q-171. Under floor on central axis. (CR 25.)
A-425: Str. Q-171. Under central bench. (CR 25.)
A-426: Str. Q-169. In front of building on and under plaza floor. (CR 25.)
A-427: Str. Q-173. Under floor. (CR 25.)
A-428: Str. Q-169. Under stairway. (CR 25.)
A-429: Str. Q-169. In front of stairway, mostly under plaza floor. (CR 25.)
A-430: Str. Q-173. Under bench. (CR 25.)
A-431: Str. Q-173a. Reservoir. (CR 25.)
A-432: Str. Q-172. Room A, under south bench. (CR 25.)
A-433: Str. Q-172. Room A, under floor under south bench. (CR 25.)
A-434: Str. Q-172c. Area within adjacent curving wall. (CR 25.)
A-435: Str. Q-170. Under plaza floor associated with earlier structure. (CR 25.)
A-436: Str. Q-208. West end, under floor. (CR 19.)
A-437: Str. Q-171. Area beyond. (CR 25.)
A-438: Str. Q-208. Under latest floor. (CR 19.)
A-439: Str. Q-208. Debris or back dirt. (CR 19.)
A-452 to 499: Not used.
A-589: Str. P-23a. Surface debris. (CR 36.)
A-596: Str. Q-52c. Surface debris.

B: Mayapan, city wall

B-6: Near great wall and Telchaquillo road.

C: Mayapan, ceremonial precincts

C-1: Str. Q-84. Surface. (CR 9.)
C-5: Str. Q-69. Debris on summit. (CR 9.)
C-54: Str. Q-99. Surface debris at northeast corner. (YB 52, p. 262.)
C-55: Str. Q-99. Trench along east wall, 0.50 m above bedrock to surface. (YB 52, p. 262.)
C-56: Str. Q-99. Trench along east wall, bedrock to 0.50 m up. (YB 52, p. 262.)
C-57: Str. Q-99. Trench along property wall near northeast corner, from base of wall to bedrock. (YB 52, p. 262.)
C-60: Str. Q-152b. On floor of room at northwest corner of platform.
C-77: Str. Q-153. Fill between latest and earlier constructions. (CR 21.)
C-78: Str. Q-153. Under stairway and in front, between second floor and bedrock. (CR 21.)
C-78a: Str. Q-153. Same, between first and second floors. (CR 21.)
C-79: Str. Q-153. Surface debris. (CR 21.)
C-79a: Str. Q-153. Pit at base of stairway. Surface to floor 1. (CR 21.)
C-79b: Str. Q-153. Pit through front terrace to bedrock. (CR 21.)
C-79c: Str. Q-153. Cache under altar. (CR 21.)

C-80: Str. Q-153. Surface debris at base of substructure. (CR 21.)
C-81: Str. Q-148. From all excavations. (CR 21.)
C-82: Str. Q-149. Surface debris, various locations. (CR 21.)
C-83: Str. Q-149. Under floor levels. (CR 21.)
C-100: Str. Q-217. Surface debris at base of south and west terrace walls. (CR 32.)
C-103: Str. Q-143. Debris on stairway. (CR 32.)
C-111: Str. H-12. Surface debris. (YB 54, p. 282.)
C-112: Str. H-12. Inside altar. (YB 54, pp. 282, 283.)
C-113: Str. H-13. Surface debris (?) (YB 54, p. 283.)
C-117: Str. H-15. Surface debris. (YB 54, p. 282.)
C-118: Str. H-15. Surface debris near altar. (YB 54, p. 282.)
C-119: Terrace wall between Str. H-14 and Str. H-15. Surface debris. (YB 54, p. 282.)
C-121: Str. H-14. Surface debris. (YB 54, p. 283.)
C-127: Str. H-16a. Surface debris (?) (YB 54, p. 283.)
C-128: Str. H-16. Surface debris. (YB 54, pp. 282, 283.)
C-133: Str. H-13. Burial shaft. (YB 54, p. 283.)
C-138: Str. H-17. Surface debris at base. (CR 28.)
C-144: Str. Q-162. Excavations near stucco jaguar. (CR 20.)

D: Mayapan cenotes, caves, sinkholes

D-1: Surface of fill in sinkhole near Group K-82.
D-21: Sascab pit, near Str. R-162. Depth approx. 1 m. (YB 52, p. 280.)
D-22: Cave northeast of Cenote Ch'en Mul. Upper 10 cm of depression W. (CR 12, p. 223.)
D-23: Same. Middle 20 cm of depression W.
D-24: Same. Lowest 20 cm of depression W.
D-25: Same. Upper 15 cm of depression X.
D-26: Same. Lower level of depression X (30 cm and less).
D-27: Same. Depression Y (10 to 20 cm).
D-50: Cenote Ch'en Mul. Black earth stratum partly on bedrock (about 25 cm). (CR 12.)
D-69: Cenote Ch'en Mul. Surface stratum. (CR 12; marked D-67 in section b-b_1, fig. 3.)
D-73: Cenote Ch'en Mul. Black earth at bottom of parts of red section in east face of main trench. (CR 12.)
D-77: Cenote Ch'en Mul. Surface and back dirt. (CR 12.)
D-89: Sascab pit, near Str. R-162. Upper 75 cm of extension. (YB 52, p. 280.)
D-90: Same. Stratum under D-89; 30 cm.
D-91: Same. Stratum under D-90; 25 cm.
D-92: Same. Western extension, upper stratum; 30 cm.
D-93: Same. Stratum under D-92; 45 cm.
D-94: Same. Stratum under D-93; 45 cm.
D-95: Same. Original pit and western extension. Lowest stratum; 50 cm.
D-96: Same. Pit in eastern depression. Surface to bedrock; 40 cm.
D-97: Pit in depression near Str. L-18. Surface stratum; 45 cm. (YB 52, p. 281.)
D-98: Same. Middle stratum; 35 cm.
D-99: Same. Lowest stratum; 72 cm.

E: Sites in the vicinity of Mayapan

E-1 to E-36: Hunacti, Tekax, Tekax cave, Tecoh (near Izamal) and Yacman, Yucatan. (R. H. Thompson, YB 50, pp. 232-36.)
E-38: Dzitoxil (Cenote 2 km northwest of Telchaquillo).
E-39: Chacchob. Upper level in trench next to house mound in milpa north of Castillo. (CR 6.)
E-40: Chacchob. Same, lower level.
E-41: Telchaquillo Cenote. (CR 12, fig. 4, sec. A-A′, stratum 4.)
E-42: Telchaquillo Cenote. Small pocket above and east of inner pool. (CR 12, fig. 4.)
E-43: Telchaquillo Cenote. (CR 12, fig. 4, sec. A-A′, stratum 3.)
E-44: Same. Stratum 2.
E-45: Same. Stratum 1.

E-46: Telchaquillo Cenote. (CR 12, fig. 4, stratum 2, pit 3.)
E-47: Same. Stratum 1.
E-48: Santa Cruz. Platform A. (CR 18, fig. 2—depression west of sec. C-C′.)
E-49: Same. Section C-C′, stratum 3, west of retaining wall.
E-50: Same. Section A-A′, stratum 3.
E-51: Same. Section B-B′, stratum 3.
E-52: Same. Section C-C′, stratum 2, west of retaining wall.
E-53: Same. Section A-A′, stratum 2.
E-54: Same. Section C-C′, stratum 1.
E-55: Same. Section C-C′, stratum 3 at east end.
E-56: Same. Section C-C′, stratum 2 at east end.
E-57: Same. Section A-A′, stratum 1.
E-58: Same. Section B-B′, upper level behind steps.
E-59: Same. Section B-B′, lower level behind steps.
E-60: Same. Section B-B′, surface soil at south end.
E-61: Same. Section B-B′, stratum 1 at south end.
E-62: Same. Section A-A′, stratum 2.
E-63: Same. Section B-B′, stratum 1.
E-64: Same. Section A-A′, stratum 1.
E-65: Same. Section B-B′, stratum just under surface soil at north end.
E-66: Same. Section B-B′, under E-65 to stratum 1.
E-67: Same. Section C-C′, pit at west end.
E-68: Santa Cruz. Platform B. Exploratory pit at south side. (CR 18, fig. 3.)
E-69: Same. Section B-B′, stratum 4.
E-70: Same. Section A-A′, stratum 3, south of platform.
E-71: Same. Section A-A′, stratum 2.
E-72: Same. Section A-A′, stratum 3, in platform.
E-73: Same. Section C-C′, stratum 3.
E-74: Same. Section B-B′, stratum 4.
E-75: Same. Section B-B′, stratum 3.
E-76: Same. Section B-B′, stratum 2.
E-77: Same. Section C-C′, stratum 2.
E-78: Same. Section C-C′, d.
E-79: Same. Section A-A′, stratum 1.
E-80: Santa Cruz. Platform C, surface soil in front of structure. (CR 18, fig. 1, section B-B′.)
E-81: Santa Cruz. Platform B. (CR 18, fig. 3, section B-B′, stratum 1.)
E-82: Same. Section B-B′, stratum 1.
E-83: Santa Cruz. Platform C, surface within structure. (CR 18, fig. 1, section B-B′.)
E-84: Santa Cruz. Cenote. Upper 40 cm of trench. (CR 18.)
E-85: Same. Middle 40 cm of trench.
E-86: Santa Cruz. Platform C, surface debris in structure. (CR 18, fig. 1, section A-A′.)
E-87: Same. Section A-A′, below floor.
E-88: Same. Section B-B′, below floor.
E-89: Telchaquillo, Great Mound, stratum 6. (CR 18, fig. 4,b.)
E-90: Same. Fig. 4,a, pit.
E-91: Same. Fig. 4,b, stratum 7.
E-92: Same. Fig. 4,a, stratum 6.
E-93: Same. Fig. 4,a, stratum 5.
E-94: Same. Fig. 4,b, stratum 5.
E-95: Same. Fig. 4,b, stratum 4.
E-96: Same. Fig. 4,b, stratum 3.
E-97: Same. Fig, 4,b, stratum 6.
E-98: Same. Fig. 4,a, stratum 4.
E-99: Same. Fig. 4,a, stratum 2.
E-100: Same. Fig. 4,a, stratum 3.
E-101: Same. Fig. 4,a, stratum 1.
E-102: Same. Fig. 4,b, stratum 2.
E-103: Same. Fig. 4,b, stratum 1.
E-104: Same. Fig. 4,b, stratum 6.

E-105: Santa Cruz. Cenote. Lowest 40 cm in trench. (CR 18.)
E-106 to E-184: Surface collections from various cenotes within 20 km of Telchaquillo, 1955.
E-185 to E-499: Not used.
E-508: Dzab-na Cave. (CR 35.)

F: Campeche (Collections of Shook and R. H. Thompson)

FC: Campeche (CR 7 and Berlin, 1956)

G: Chichen Itza and vicinity (R. E. Smith, in preparation)

H-L: Not used

M: Merida and other sites of northern Yucatan

N-O: Not used

P: Puuc region (R. E. Smith, in preparation)

Q: Quintana Roo (CR 23; Sanders, 1960; also collections of E. W. Andrews)

R: Actun Dzonot, north of Dzitas

S-T: Not used

TA to TL: Tabasco and Chiapas (CR 7 and Berlin, 1956)

U-Y: Not used

Z: Colonial sites

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FIGURES

FIGURE 1. Altar figures in the form of turtles. Mayapan. Limestone. Scale approx. 1/4.

a: No. 52-159. Fragment. Length 10 cm; height 10.2 cm; width 17.2 cm. Str. P-39, Lot A.

b: No. 55-121. 12.5 × 6 × 10 cm. Lot C-118.

c: No. 55-285. 21 × 9.1 × 14.3 cm. On floor of walled area next to Str. Q-173a. Lot A-431.

d: No. 55-6. 18 × 8.6 × 9.3 cm. Oval receptacle approx. 7.5 × 6 × 4 cm; orifice 5.5 × 4.6 cm. Centered in front of altar over a looted cache in central rear room of Str. R-87. Lot A-208.

e: No. 55-327. Turtle with human head in beak. 14.6 × 6.1 × 7.9 cm. Near central altar of Str. H-17. Lot C-120.

f: No. 55-42. Two fragments. 8.6 × 5.3 × 8.4 cm and head 5 × 4 × 4.8 cm. Glyphs: 10 (?), 8 Ahau. Lot A-166.

g: No. 55-9. 21.7 × 13.6 × 13.6 cm. Beak broken. Shallow rectangular receptacle on back. 13 Ahau glyphs on carapace. On floor of shrine room of Str. Q-244b. Lot A-500.

h: No. 55-307. Eroded turtle with human head. 25 × 10.7 × 18.2 cm. 8 or 9 glyphs on carapace, surrounding diagonal cross in rectangle. Lot C-116.

i: No. 55-365. Fragment: head of God D in beak of turtle. 7.8 × 9.5 × 9 cm. Lot C-107.

j: No. 54-70. Turtle with human head. 16.3 × 5.5 × 15.6 cm. Front flippers or arms missing. Receptacle formed by deep groove on back. In front of altar in Str. Q-153. Lot C-79.

k: No. 55-283. Turtle with human head and arms. 18.2 × 8.2 × 11 cm. Oval receptacle: 9 × 5 × 6.8 cm (depth). In front of altar in Str. Z-50c. Lot C-143.

m: No. 54-58. Turtle with human head. 29.6 × 12.4 × 17.5 cm. Round receptacle 10 cm diam. × 5 cm. On floor in temple, Str. Q-159. Lot C-66.

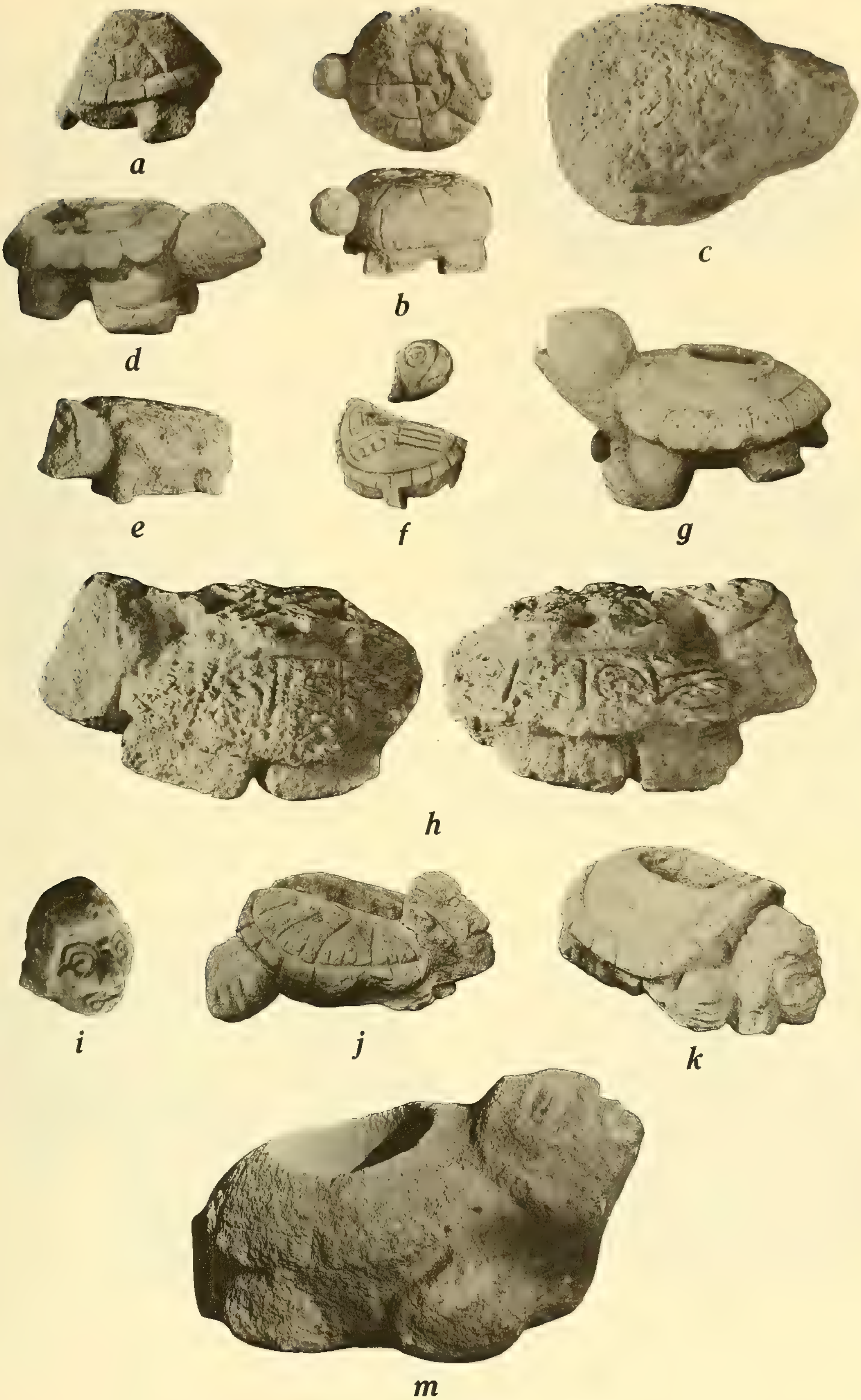
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FIGURE 1

FIGURE 2. Altar figures in the form of turtles (continued). Mayapan. Limestone. a,b,c: Approx. 1/4 actual size; others not to scale.

a: No. 55-120. Turtle with features of God D. 22.5 × 18 × 15.6 cm. Near central altar of Str. H-17. Lot C-120.

b: No. 55-306. Turtle with features of God D. 24.4 × 15 × 16 cm. Near central altar of Str. H-17. Lot C-120.

c: No. 55-328. Turtle with head of God D in beak. 22.2 × 18.3 × 16 cm. Near central altar of Str. H-17. Lot C-120.

d: No. 54-81. Turtle with head of God D in beak. 42 × 17.5 × 26 cm. In doorway to shrine of Str. Q-81. Lot C-72.

e: No. 54-293. Turtle with head of God D in beak. 41 × 10.8 × 35 cm. Round receptacle with lid: diam. 9.4 cm, 6 cm deep. On looted cache between two stucco figures in front of altar in shrine of Str. Q-151. Lot C-93a.

f: Same as e. Under side, showing matrix of mortar in which turtle was imbedded.

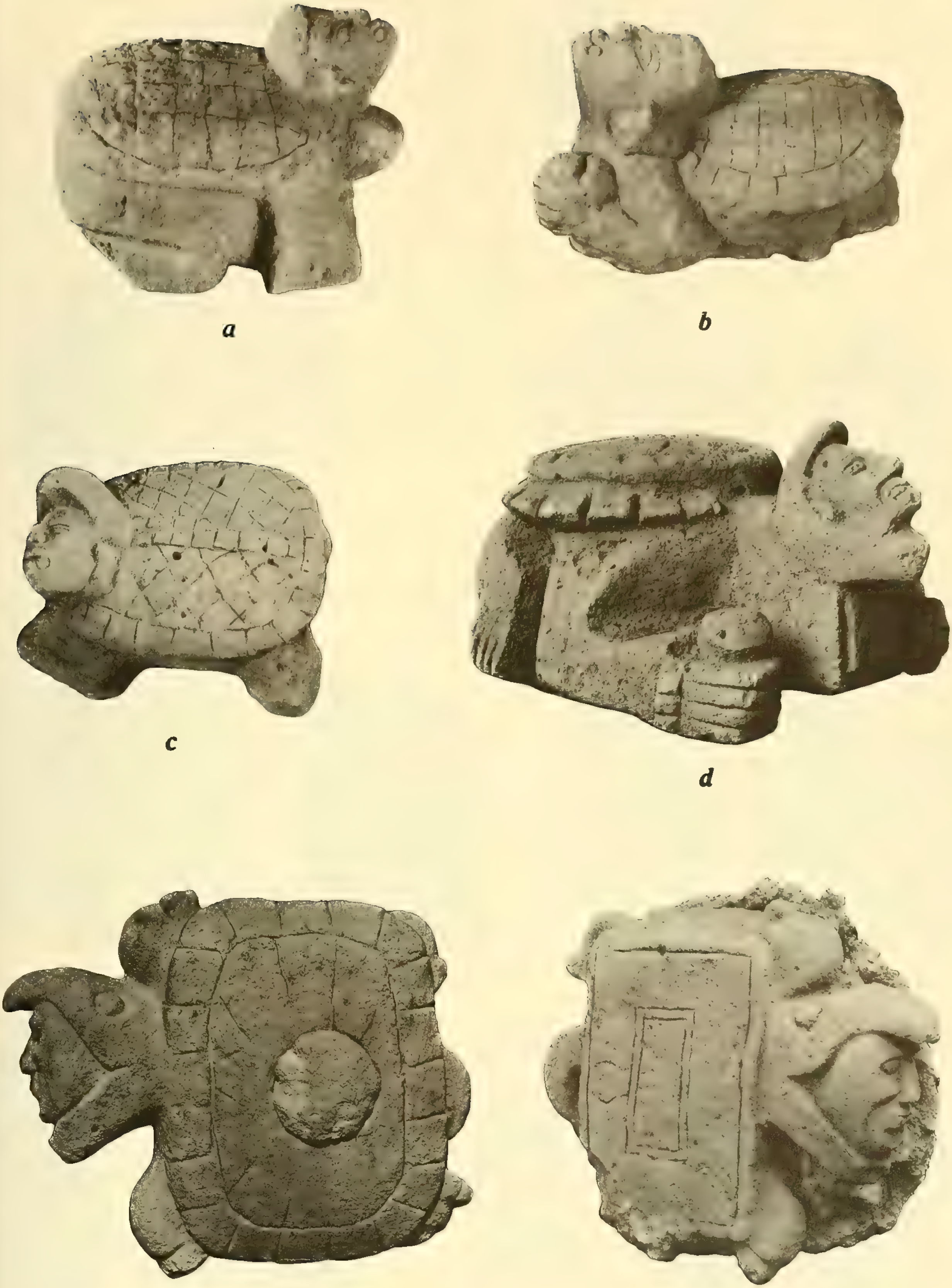

FIGURE 2

FIGURE 3. Altar figures in the form of crouching gods. Mayapan. Limestone. Scale approx. 1/4.

a: No. 54-43. 13.2 × 7.8 × 4.8 cm. Head from nose to chin and object held in hands are broken. Found on altar of south range, Str. Q-156. Lot C-1.

b: No. 55-10. Fragment. 7.9 × 12.4 × 7.3 cm. Probably head of crouching idol. Near shrine of Str. Q-244d. Lot A-500.

c: No. 55-112. Badly eroded sculpture of crouching god. 23 × 17.5 × 12.6 cm. Lot C-114.

d: No. 54-69. Crouching figure of God D (?). 16.8×16.4×10.1 cm. On floor in front of altar, Str. Q-208. Lot A-95.

e: No. 55-11. 21.9 × 16.6 × 13.7 cm. Crouching figure of God D (?), with holes through folded hands for insertion of objects. Lot A-501.

f: No. 55-12. Crouching figure of God D (?). 17.7 × 16.4 × 11.9 cm. Lot A-500.

g: No. 55-296. Crouching or "diving" figure of God E (?). 18.7 × 15.5 × 11.4 cm. Lot A-554.

h: No. 55-117. Fragment: hands holding round object; probably from crouching god figure. 6.1 × 4.4 × 5.5 cm. Lot C-114.

i: No. 54-129. "Diving God" figure (?). 17.8 × 11.0 × 8.5 cm. Lot A-130.

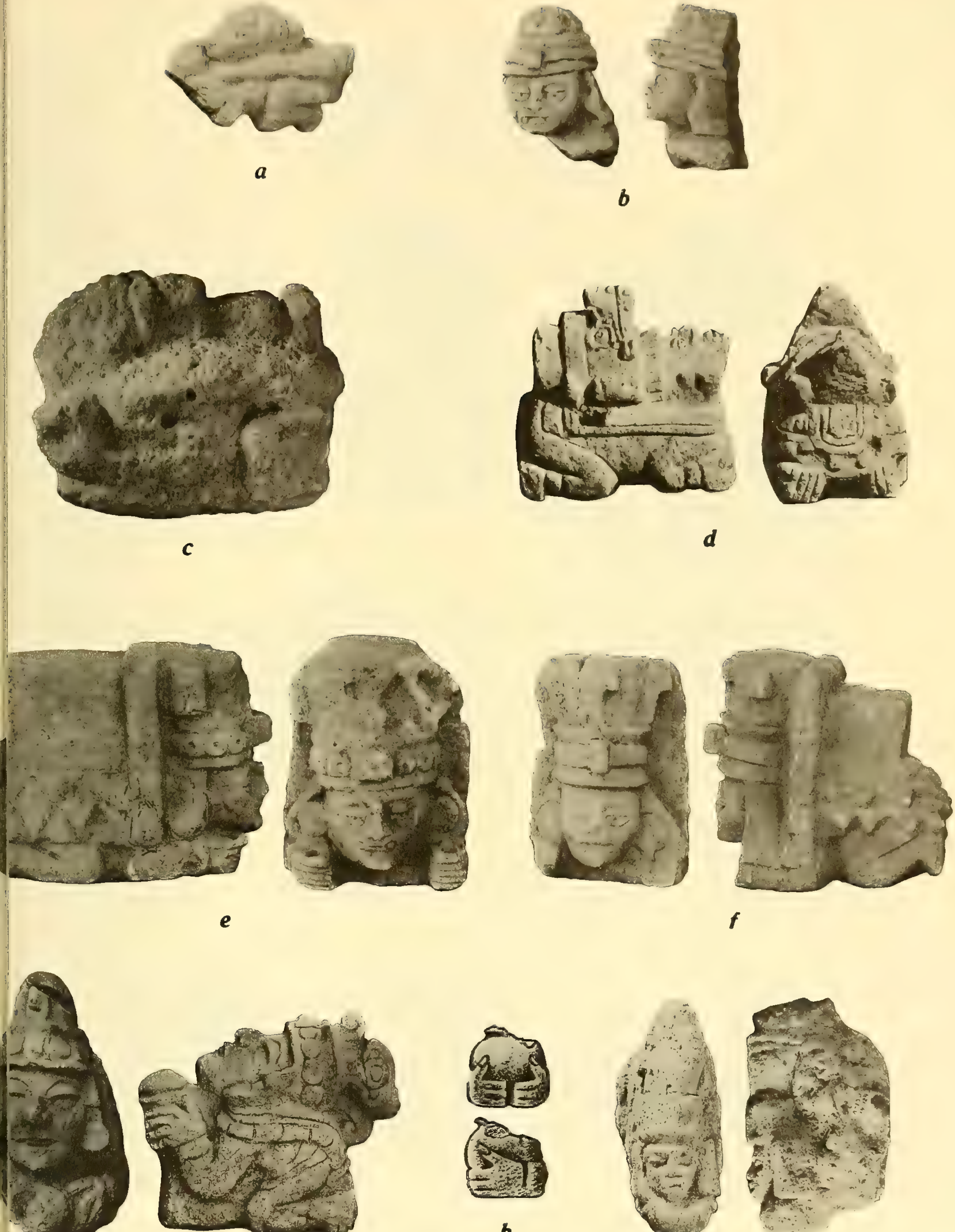

FIGURE 3

FIGURE 4. Altar figures in the form of animals with burden. Mayapan. Limestone. Scale approx. 1/4.

a: No. 55-126. Jaguar (?) with human figure on back. 12.1 × 9 × 7.9 cm. Figure holds round objects in hands. Limestone calcined by fire. In refill of looted burial cist in Str. R-86. Lot A-180.

b: No. 55-280. Animal figure with receptacle on back. 10.5 × 6.8 × 4.8 cm. Badly burned surface; head broken; traces of ears remain. Rectangular receptacle about 1.3 cm deep. Found in niche in basal platform north of Str. Z-50a. Lot C-142.

c: No. 55-281. Jaguar with human figure on back. Two fragments. 15 × 9.2 × 7.5 cm. Burned. Human figure wears loincloth and holds cylindrical or round object in hands. Detail eroded. In niche in basal platform north of Str. Z-50a. Lot C-142.

d: No. 55-305. Crouching figure with coiled snake on back. 18.6 × 16.3 × 11.2 cm. Near central altar of temple, Str. H-17. Lot C-120.

e: No. 54-125. Reptilian figure with human figure on back. 26 × 15.3 × 10.8 cm. Heads of both figures broken. Glyphs: 4 Ahau, 13 Ahau, and 1 Ahau. On floor in front of central passage in Str. R-88. Lot A-130.

FIGURE 5. Unclassified altar figures. Mayapan. Limestone. Scale approx. 1/4.

a: No. 55-17. Fragment of iguana with head of God D in mouth. 11.7 × 13.9 × 8.7 cm. Lot C-109.

b: No. 55-108. Fragment: head of God D (?) with serpent headdress, emerging from shell. 15.1 × 14.2 × 10.5 cm. Traces of plaster on surface. Lot C-114.

c: No. 55-134. Small sculpture representing two human faces. 12.2 × 9.8 × 7.9 cm. On floor of south room, Str. Q-172. Lot A-402.

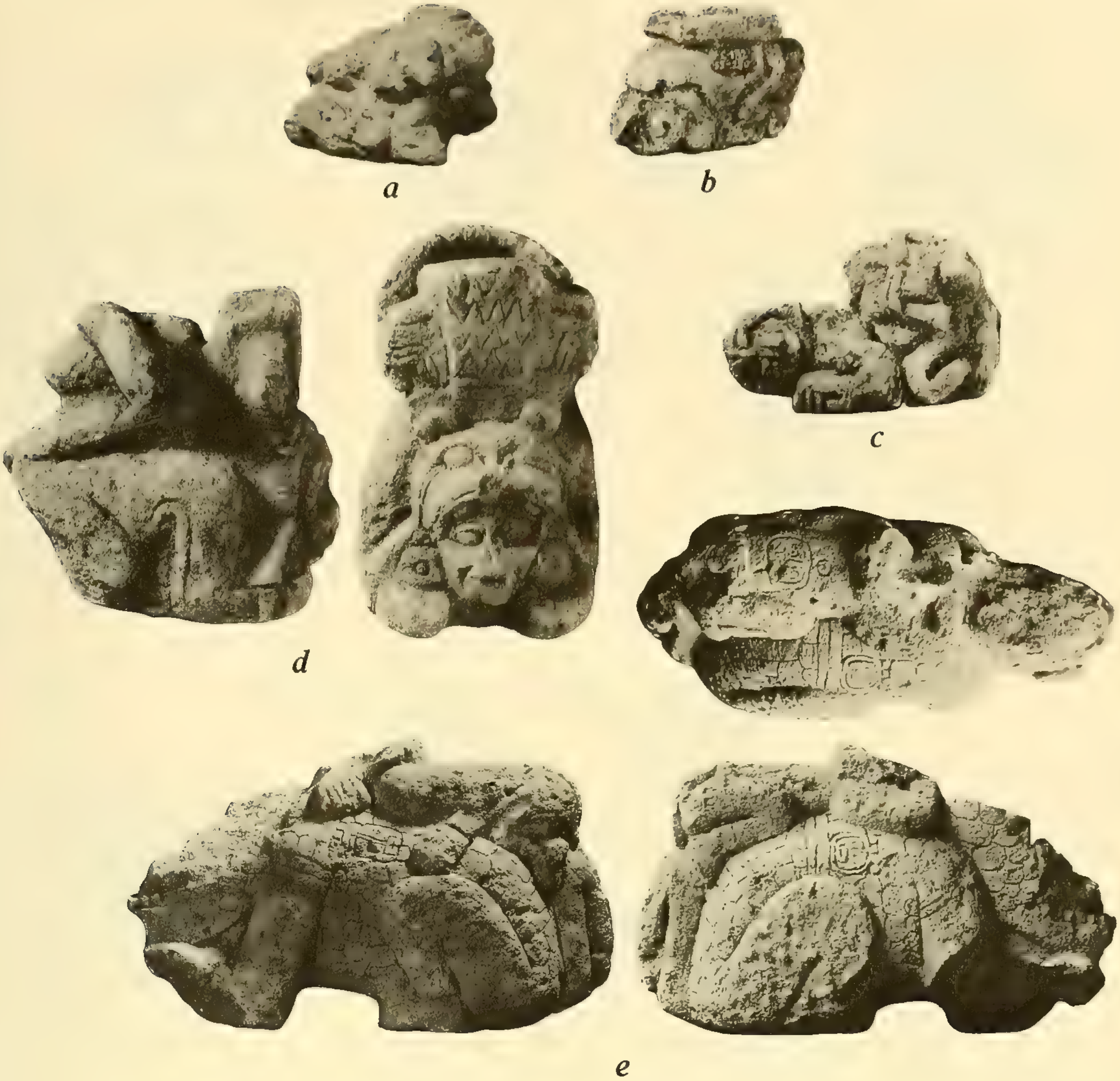
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FIGURE 4

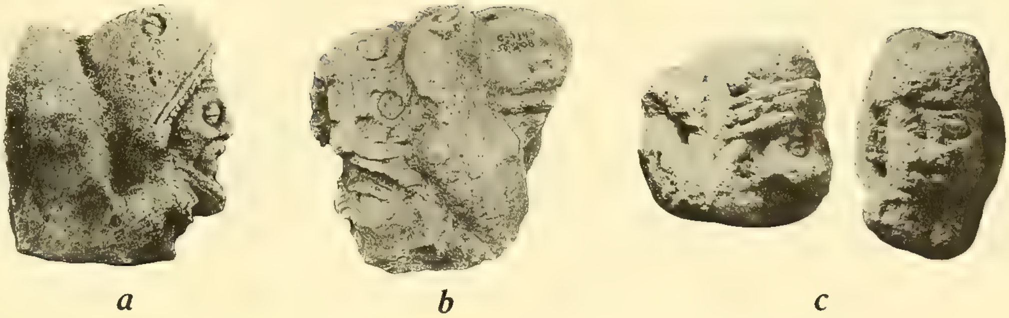
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FIGURE 5

FIGURE 6. Ritual sculptures representing inanimate forms. Mayapan. Limestone. Scale approx. 1/4.

a: No. 55-286. Sculptured shrine. 8.4 × 13.5 × 7 cm. Doors on all four sides. Base slightly hollowed. Undeciphered glyph on roof. In room with altar, Str. S-133b. Lot A-554.

b: No. 55-128. Sculptured shrine. 8.7 × 9.7 × 7.8 cm. Doors on all four sides. Irregularly-shaped pit in base, about 2 cm deep. From refill of burial cist in Str. R-86. Lot A-188.

c: No. 55-127. Sculpture of tripod bowl with offering. 8.6 × 8.5 × 7.7 cm. From refill of burial cist in Str. R-86. Lot A-176.

d: No. 55-295. Sculpture of altar (?). 10.9 × 10.6 × 9.7 cm. From room with altar, Str. S-133b. Lot A-554.

e: No. 52-209. Broken receptacle, probably representing turtle carapace. 10.8 × 7.3 × 9 cm. On summit of mound, Str. Q-149. Lot C-1.

f: No. 55-129. Sculptured scroll. 14.5 × 12 × 4.6 cm. Back is plain except for encircling grooves above and below plaited band. From refill of burial cist in Str. R-86. Lot A-188.

FIGURE 7. Miscellaneous limestone sculptures. Mayapan. b not to scale. Others approx. 1/4.

a: No. 53-203. Head of fish (?). Chalky white limestone, probably burned on surface. 9 × 10 × 3.3 cm. From sealed fill of Str. T-70. Lot C-4.

b: No. 54-193. Leaf-form sculpture, 2 fragments. 16.7 × 28 × 5.5 cm. Traces of plaster on one side. Lot C-96.

c: No. 54-27. Fragments of a small idol. Approx. 18 × 11 × 10 cm. In cache at entrance to Temple of Kukulcan. Lot C-65.

d: No. 55-110. Fragment. Small human or simian head. 8.3 × 7 × 8 cm. Small pit in top of head, 1 cm deep. Mouth and chin eroded. Lot C-114.

e: No. 56-89. Fragment, badly weathered. Human or animal head. 7.4 × 8.5 × 9.9 cm. Lot A-266.

f: No. 54-21. Fragment, human head. 9 × 9.6 × 9 cm. Lot C-64.

g: No. 55-323. Fragment, human head. 9.1 × 10 × 8 cm. Lot C-120.

h: No. 54-136. Fragment, head of parrot (?). 4 × 6.5 × 5 cm. Traces of plaster painted blue on beak and on head. Lot A-130.

i: No. 54-80. Small carved form. 4.2 × 6.2 × 3.2 cm. Section is rectangular and back is plain. Lot A-96.

j: No. 53-5. Small plug (?). 3.2×5.3×2.3 cm. Oval section. Lot A-31.

k: No. 52-42. Small idol (?). 8.5 × 15.0 × 4.8 cm. Location unknown. Lot A.

m: No. 55-639. 7.5 × 11.1 × 3.5 cm. Near city wall. Lot B-6.

n: No. 54-93. Fragment. 4.8 × 2.8 × 1.7 cm. Lot C-73.

o: No. 55-624. Small carved figure. 2.3 × 4.3 × 1.7 cm. Lot A-441.

p: No. 53-211. Crude figure; unidentified. 2.7 × 4.2 × 2.3 cm. Lot C-32.

q: No. 55-304. Small figure of monkey. 4.1 × 5.0 × 4.3 cm. Tail of monkey indicated on back. Lot A-557.

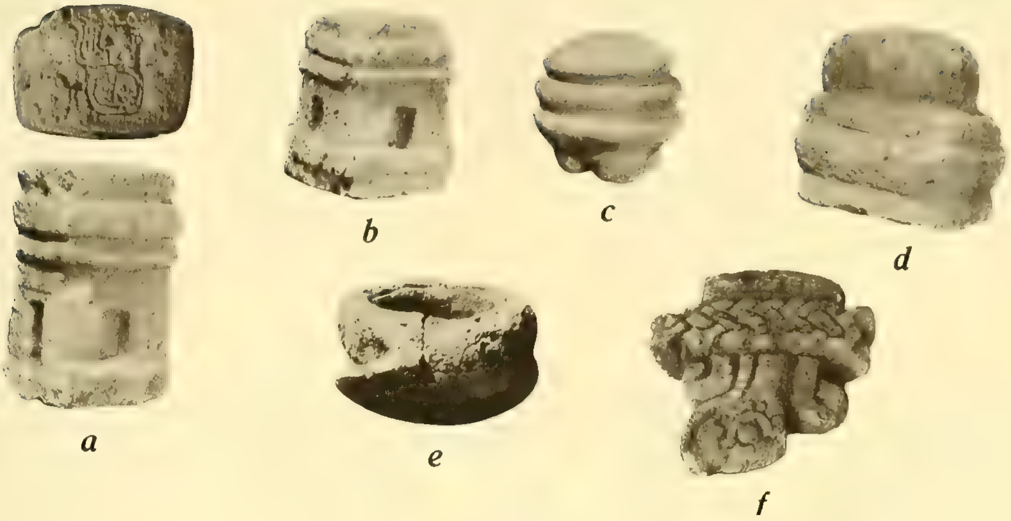

FIGURE 6

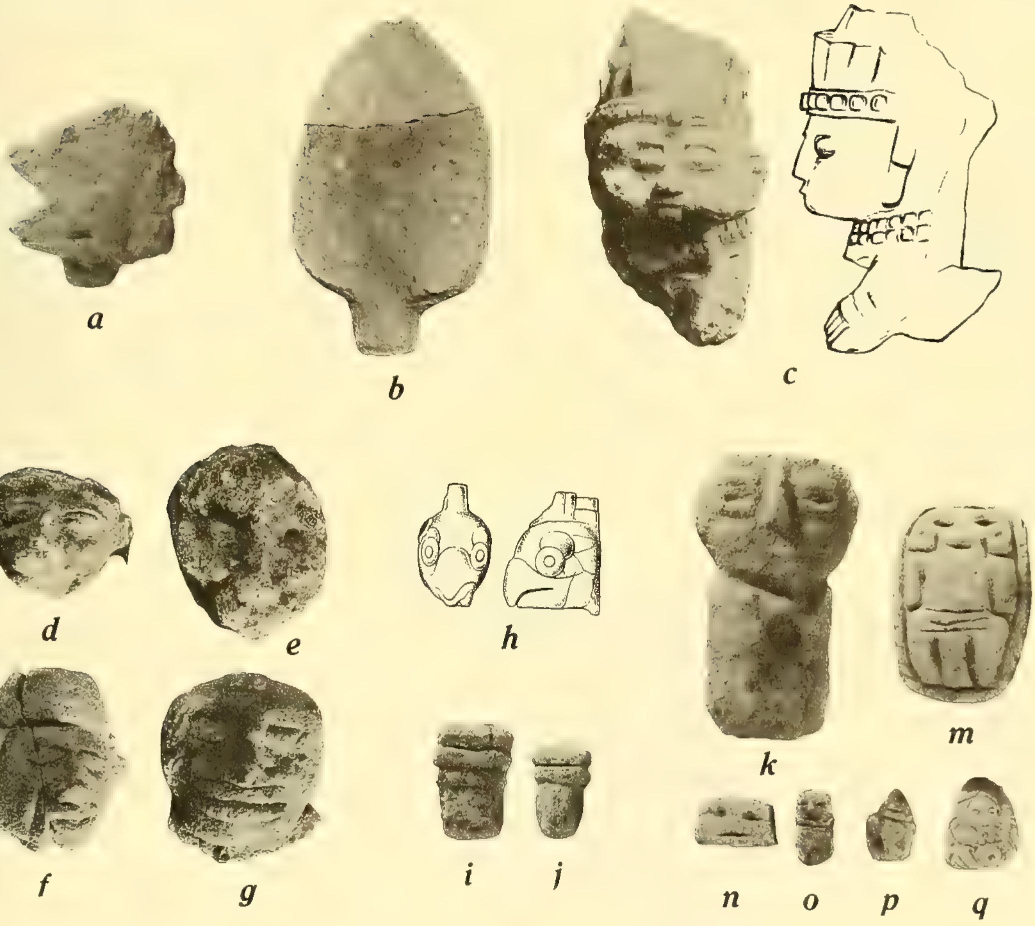
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FIGURE 7

FIGURE 8. Limestone metates and mortars. Mayapan.
Scale approx. 1/10.

a-*d*: Typical metates from various house locations.

e: Metate with rim at both ends (rare).

f: Metate with deep trough and high sides.

g,*h*: Metates lacking rim at ends.

i: Metate made from column drum.

j: Metate with secondary trough.

k,*m*: Metates notched at open end (rare).

n,*o*: Mortars.

p: Trough or "pila."

q: Fragment of limestone metate with leg.

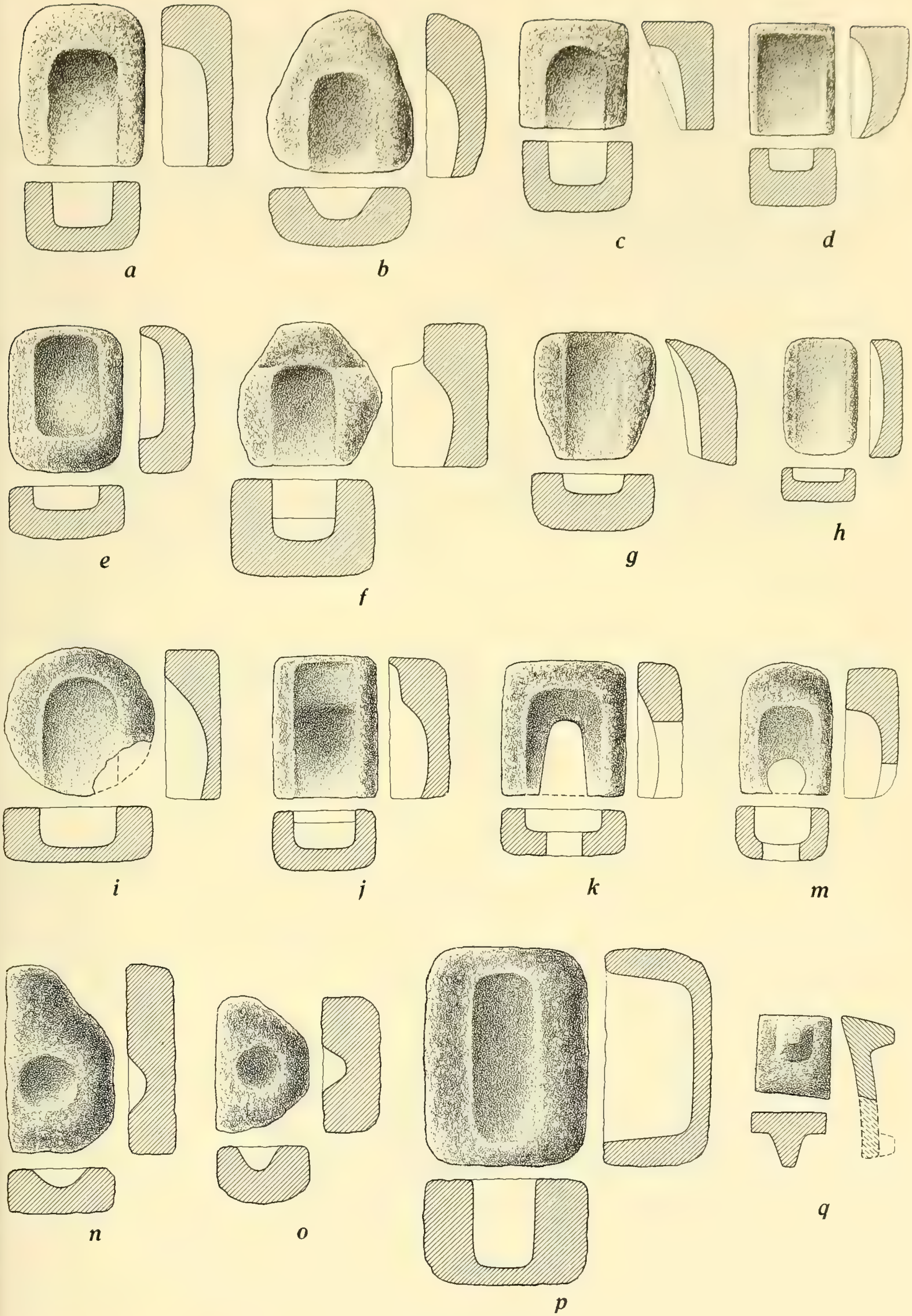
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FIGURE 8

FIGURE 9. Limestone metates and mortars. Mayapan.
Scale approx. 1/5.

a: Metate. Lot A-587.

b: Metate and mano. Lot A-501.

c: No. 54-180. Metate of unusually fine-grained white limestone. 28 × 23 × 13 cm. From cist in Str. AA-94. Lot A-147.

d: No. 53-236. Broken metate on Str. X-62. Lot A.

e: No. 54-107. Fragment of grooved metate with leg. Lot A-104.

f: No. 52-134. Fragment of stone vessel. Diameter at base 30 to 50 cm. Interior evenly rounded. Near Str. P-124a. Lot A.

g: No. 55-284. Fragment of stone mortar. Diameter approx. 21 cm; height 10.5 cm. Lot A-429.

FIGURE 10. Pestles. Mayapan. Scale approx. 2/5. All of limestone.

a: No. 54-91. Pear-shaped pestle. Very hard, white limestone. Diameter 5 cm; length 7.5 cm. Polished working surface. Lot C-70.

b: No. 55-303. Pestle. Hard white limestone. Diameter 3.8 to 4.1 cm; length 5.5 cm. Lot A-563.

c: No. 52-229. Pestle. Diameter 4 to 4.5 cm; length 7 cm. Working surface smooth. Near Str. AA-97. Lot A.

d: No. 55-31. Pestle. Diameter 4.8 cm; length 6.9 cm. Working surface smooth. Found on floor of kitchen. Lot A-223.

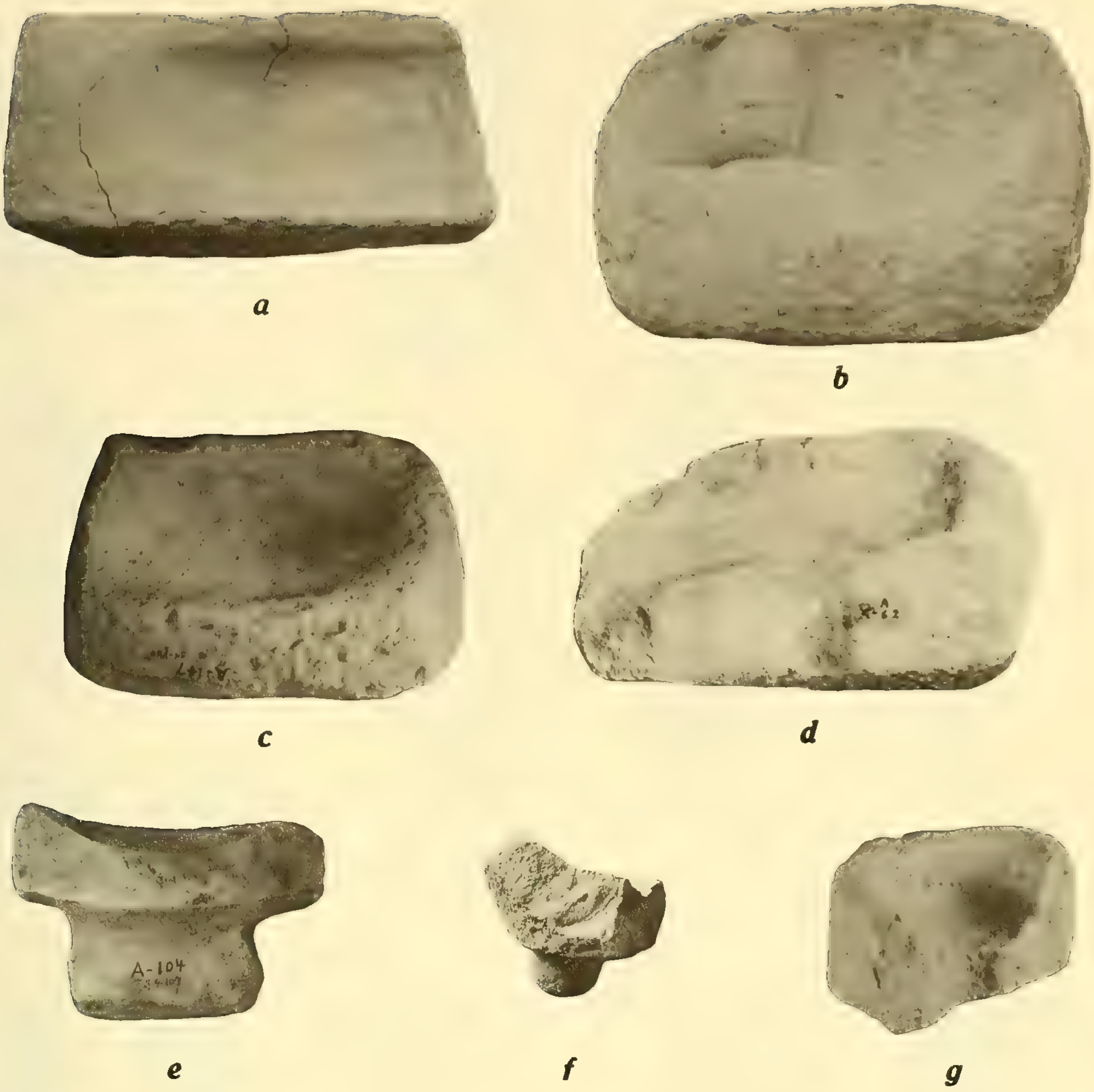
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FIGURE 9

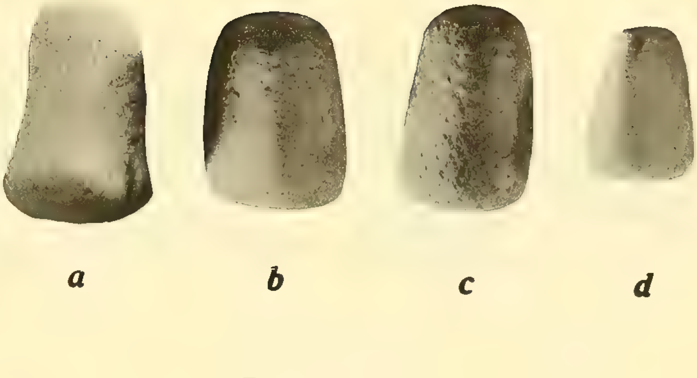

FIGURE 10

FIGURE 11. Corn-grinding manos. Mayapan. Limestone. Scale approx. 1/4.

a: No. 52-156. Fragment of blunt-ended mano. Section oval, 9 × 7 cm. One surface flattened by wear. Str. P-49d. Lot A.
b: No. 52-200. Fragment of blunt-ended mano. Section 7.6 × 5.4 cm. Flattened on two sides. Surface eroded. Lot D-13.
c: No. 54-183. Blunt-ended mano. 20.4 × 8.7 × 7.2 cm. Ovoid section, worn on both surfaces. Round pit in top surface. From cist in Str. AA-94. Lot A-147.
d: No. 53-167. Short blunt-ended mano. Section quadrangular, 8.1 × 5.1 cm; length 14.6 cm. Sealed below burial shaft in Str. Q-95. Lot C-30.
e: No. 52-44. Fragment of unusually large mano or roller. Section round, 10 to 10.4 cm. Surface originally smooth, unfaceted. Str. H-29. Lot A.
f: No. 52-40. Blunt-ended mano with ridged surface. 17.2 × 7.4 × 4.2 cm. Lower surface strongly flattened by use. Str. L-38. Lot A.
g: No. 52-95. Blunt-ended mano with ridged surface. 17.5 × 7.4 × 5.1 cm. Group Z-93. Lot A.
h: No. 55-289. "Cigar-shaped" mano with tapering ends. Section almost round, 9 × 8 cm; length 18.5 cm. Surface uniformly smooth, without wear. Lot A-542.
i: No. 55-363. "Cigar-shaped" mano of very fine white limestone. Section almost round; diameter 7.3 cm; length 22.9 cm. Broken in two sections, one on Str. Q-165, the other on Str. Q-168. Lots A-441, A-250.
j: No. 52-39. Fragment of "knob-ended" mano used with tripod metates. Maximum diameter 5 cm. Str. K-98a. Lot A.

FIGURE 12. Rubbing stones. Mayapan. Limestone. Scale approx. 1/4. a-f: Plaster-smoothing manos. g-j: Small, flat rubbing stones. k-n: Rubbing stones with projecting grip.

a: No. 55-592. Reddish limestone. 16.5 × 8.0 × 4.1 cm. One flat rubbing surface. Traces of plaster on all surfaces. Lot A-554.
b: No. 54-184. 18.0 × 8.0 × 6.0 cm. Reddish limestone. One flat rubbing surface. Traces of plaster on all surfaces. In cist of Str. AA-94. Lot A-147.
c: No. 55-574. 19.3 × 9.7 × 6.0 cm. One flat, smooth surface with plaster adhering to edges. Shallow grooves on sides. Lot A-501.
d: No. 54-187. 12.7 × 7.8 × 3.6 cm. Rectangular section. Plaster adhering to sides and back. In cist of Str. AA-94. Lot A-147.
e: No. 55-609. 11.4 × 6.8 × 5.3 cm. Flat rubbing surface on under side. Traces of plaster and red paint on back. Lot A-536.
f: No. 55-601. Broken end of mano re-used as rubbing stone. 9.9 × 8.4 × 5.3 cm. Flat, flinty rubbing surface on under side. Pits in upper surface, about 2 cm deep. Lot A-559.
g: No. 54-141. 10.2 × 8.5 × 3.4 cm. Rectangular section. Two parallel rubbing surfaces. Traces of plaster on sides. Lot A-115.
h: No. 55-288. 8.6 × 8.0 × 4.3 cm. One flat rubbing surface. Traces of plaster on sides. Lot A-554.
i: No. 56-73. Probably end of a mano re-used as a rubbing stone. 6.1 cm diameter × 3.2 cm. Lower surface polished smooth. Lot A-251.
j: No. 53-176. 7.0 × 6.5 × 4.0 cm. Two parallel smoothed surfaces, one slightly concave. Plaster adhering to sides. Lot A-52.
k: No. 52-218. 12.0 × 9.0 × 6.2 cm. One smooth rubbing surface with traces of plaster at edges. On terrace of Str. AA-31. Lot A.
m: No. 55-290. 10.6 × 6.8 × 6.6 cm. Oval, flat rubbing surface. Traces of plaster on sides. Lot A-543.
n: No. 55-311. Fine-grained limestone. 8.3 × 4.5 × 4.2 cm. Unshaped except for smooth rectangular rubbing surface. Plaster on sides. Lot A-508.

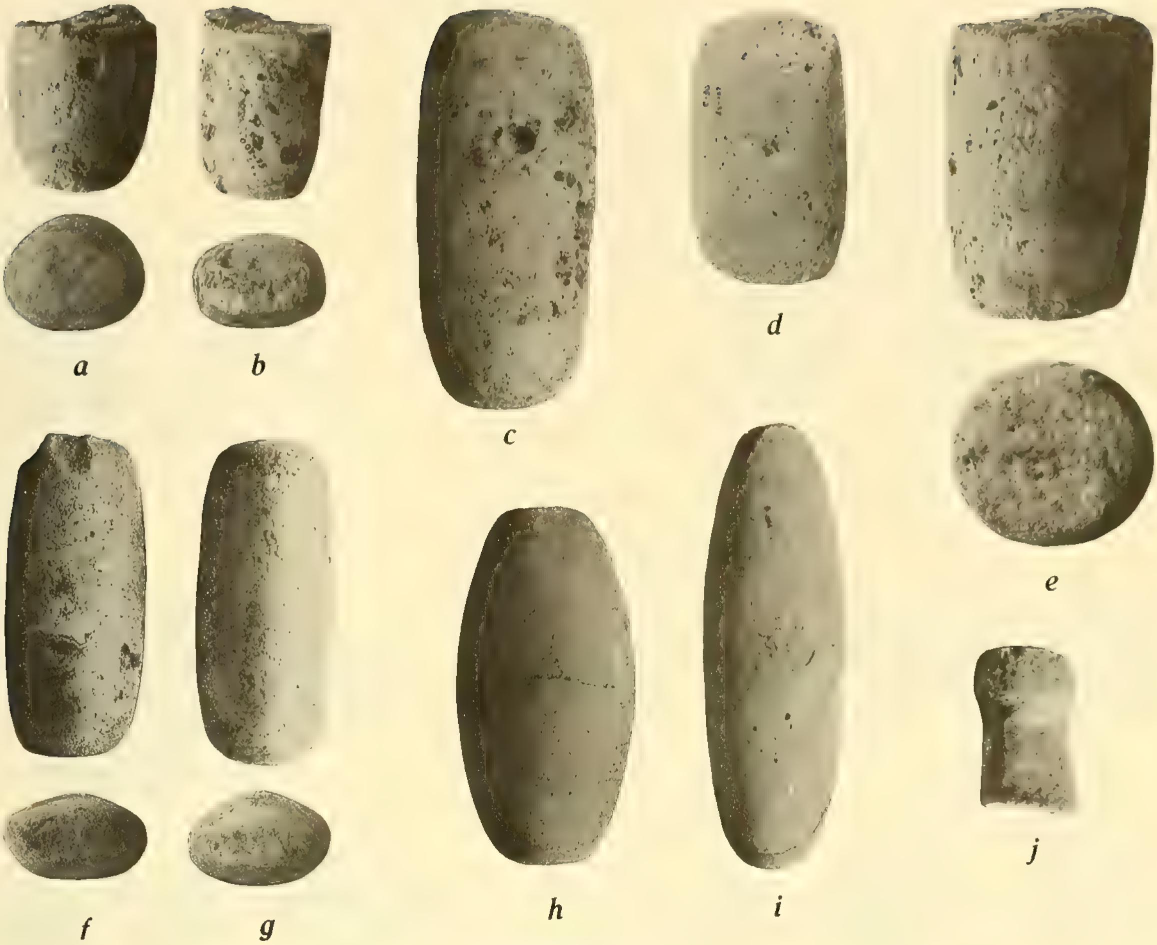

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FIGURE 11

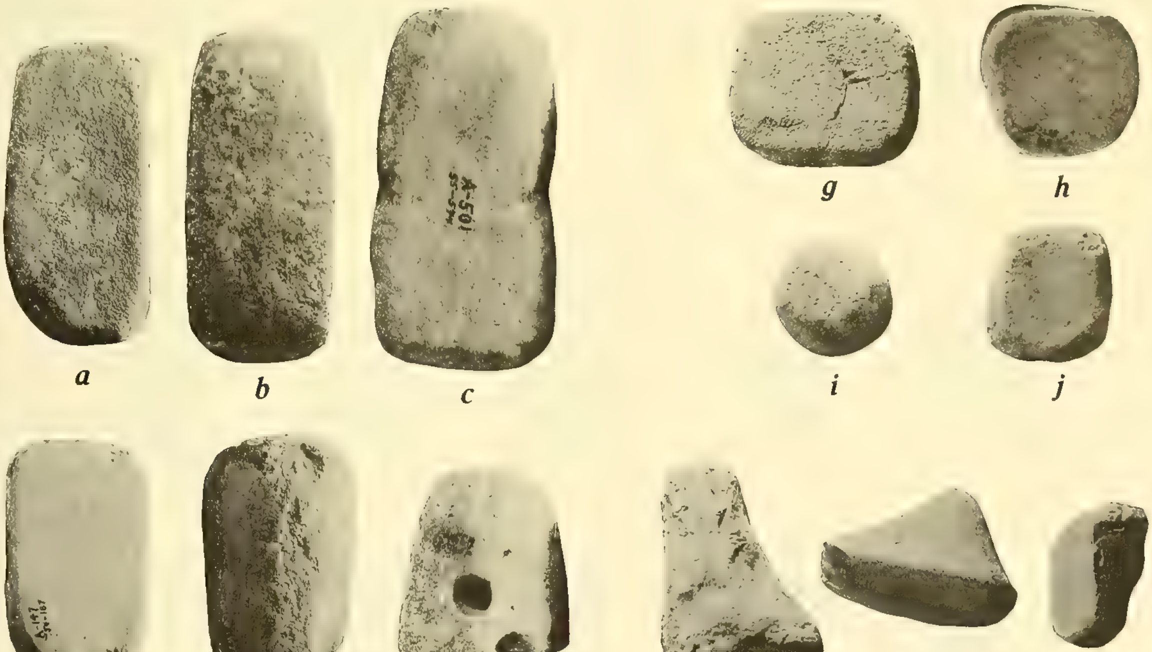

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FIGURE 12

FIGURE 13. Rubbing stones (continued). Mayapan. Limestone. Scale approx. 1/4.

a: No. 52-7. Fine-grained gray limestone. 9.1 × 4.8 × 2.2 cm. Portion of mano, re-used (?). Plaster on edges. Str. R-38. Lot A.

b: No. 55-579. Fine flinty limestone. 9.9 × 5.1 × 3.8 cm. Three smooth surfaces. Burial in Str. Q-37a. Lot A-587.

c: No. 53-190. Fine gray limestone. 9.0 × 6.0 × 3.8 cm. Section rectangular. One smooth surface. Str. X-63. Lot A.

d: No. 53-3. Fine limestone. 9.5 × 7.7 × 4.7 cm. Four smooth rubbing facets. Str. Q-250. Lot A.

e: No. 55-314. Four corner facets. Fine white limestone. 11.5 × 7.7 × 6.6 cm. All surfaces smooth. Lot A-508.

f: No. 52-189. Fine gray stone, stalagmite (?). One rubbed surface. 9.2 × 3.8 × 2.0 cm. Oval section. Str. AA-19. Lot A.

g: No. 56-70. Mano, five flat facets. Very fine white limestone. 18.3 × 6.7 × 6.2 cm. Lot A-255.

h: No. 53-223. Mano, three flat facets. 16.2 × 6.7 × 6.4 cm. Faint transverse striations on rubbing surfaces. Lot C-54.

i: No. 55-583. Tool with five rubbed surfaces. Hard, fine limestone. 16.7 × 5.4 × 5.0 cm. Both ends battered. Burial, Str. Q-37a. Lot A-587.

FIGURE 14. Subspherical stones. Mayapan. Scale approx. 1/4.

Normal hammerstones (limestone). a: No. 55-41; diam. 10.5 cm; Lot A-221. b: No. 54-5; diam. 6.6 to 7.5 cm; Lot A-93. c: No. 55-571; diam 5.6 cm; Lot A-543. d: No. 55-614; diam. 4.5 cm; Lot A-400.

Chert hammerstones. e: No. 55-559; two flinty surfaces and round pecked (?) edge; 7.6 × 6.6 × 4.1 cm; Lot A-442. f: No. 54-192; chert nodule with battered edge; max. diam. 9.2 cm; cist, Str. AA-94; Lot A-147.

Subspherical stones with rubbed facet (limestone). g: No. 55-568; one rubbing facet; max. diam. 4.6 cm; Lot A-449. h: No. 53-4; one smooth flat facet; max. diam. 5.4 cm; Lot A-31. i: No. 54-189; one flattened facet; max. diam. 7.8 cm; Lot A-147.

Worn and scarred hammerstones (limestone). j: No. 55-103; two lightly concave facets, remaining surface pecked; diam. 6 cm max., 3.6 cm min.; Lot A-238. k: No. 52-153; badly scarred surface; diam. 5.8 cm; Lot A-17. m: No. 55-564; nearly flat scarred surface; 8.6 × 8.3 × 5.2 cm; Lot A-444.

Miscellaneous subspherical stones (limestone). n: No. 55-555; irregular, hammerstone (?); max. diam. 7.5 cm; Lot A-441. o: No. 54-278; max. diam. 5.5 cm; irregular; facets smooth but not flat; Lot A-84. p: No. 56-79; smooth ball; diam. 4.3 cm; Lot A-251. q: No. 52-56; subspherical stone with grip formed by two pits; max. diam. 8.6 cm; surface eroded; Str. I-63a; Lot A. r: No. 55-589; round pebble, shaped (?); max. diam. 2.7 cm; Lot A-449. s: No. 55-588; round pebble; max. diam. 2.4 cm; Lot A-441.

FIGURE 15. Various pounding tools. Mayapan. Limestone. Scale approx. 1/4.

Subcylindrical hammerstones. a: No. 55-16; fine gray limestone; 10.5 × 6.1 × 5.1 cm; one flat rubbing facet; lower end scarred; pounding tool made from mano (?); Lot A-500. b: No. 53-185; made from mano (?); 9.3 × 6.7 × 5.2 cm; roughly oval section, one flattened side; ends rounded and pecked; Lot A-77. c: No. 53-207; made from mano (?); 10.3 × 7.5 × 6.1 cm; oval section; ends rounded and pecked; rough pit about 2 cm deep; Lot C-55. d: No. 56-83; faceted stone, round battered ends; 8.6 × 6.5 × 5.4 cm; Lot A-160. e: No. 56-72; reworked fragment of mano (?); 7.7 × 7.6 × 6.0 cm; roughly round section, one flat facet; pecked ends; Lot A-169.

Other pounding or pecking tools: f: No. 52-48; pear-shaped hammerstone; max. diam. 8.8 cm; Lot B-1. g: No. 52-167; pear-shaped hammerstone or unused pestle; max. diam. 9.2 cm; near Gate AA; Lot A. h: No. 52-160; grooved hammer; 9.8 × 5.5 × 3.6 cm; east of Str. Z-149; Lot A. i: No. 55-39; broken grooved maul (?); 8.5 × 7.5 × 7.5 cm; Lot A-221. j: No. 53-105; fragment of mano, re-used (?); very hard, flinty, white limestone; 6.7 × 5.9 × 3.6 cm; lower surface flat, chipped on edges; Lot C-31.

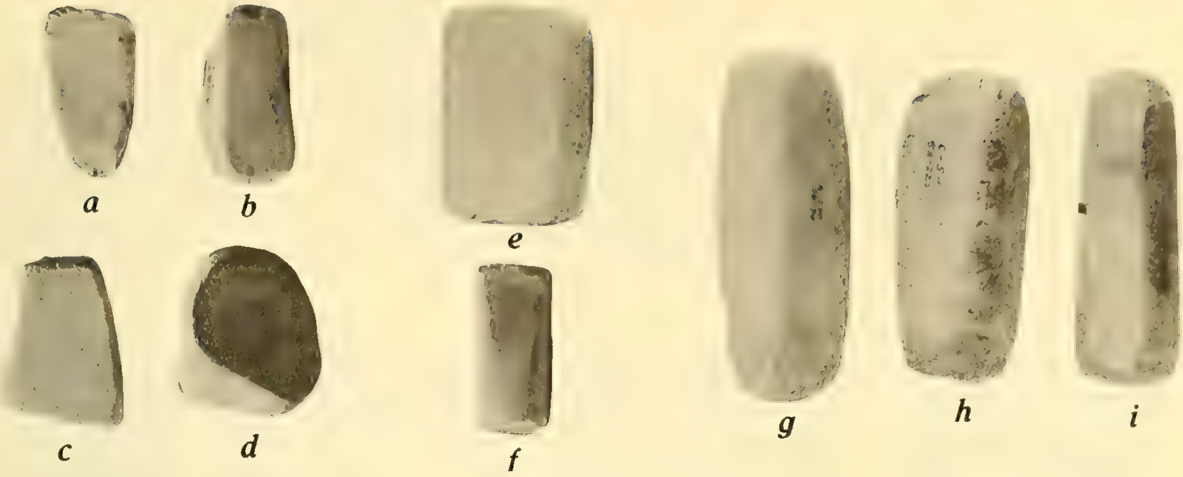

FIGURE 13

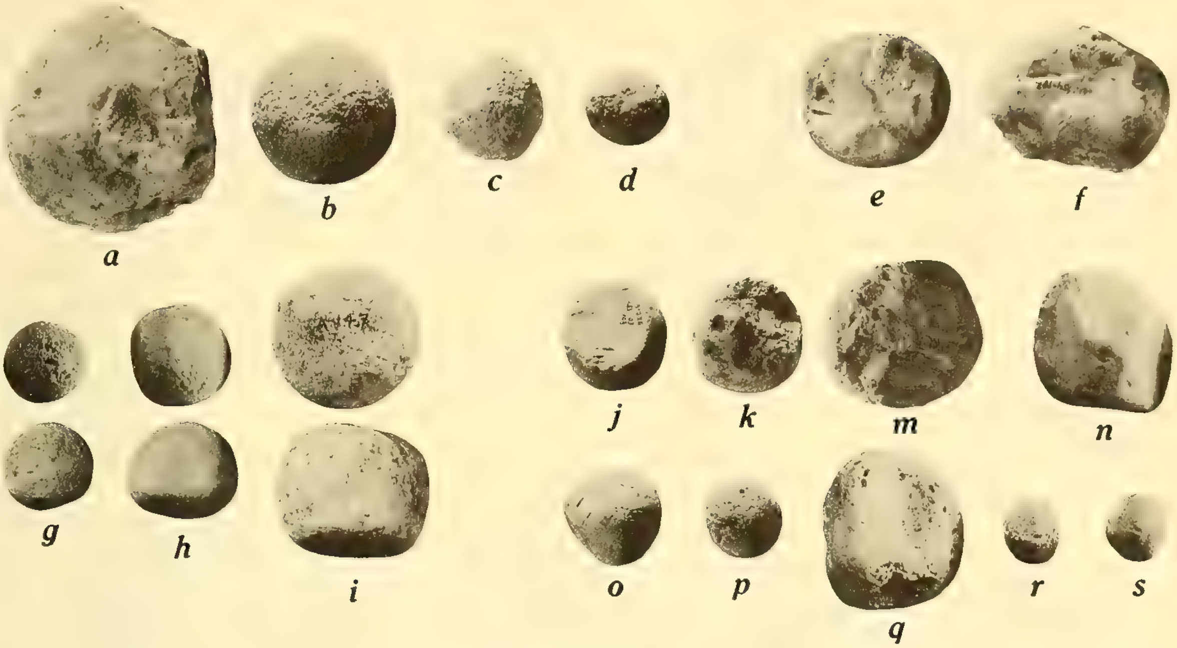
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FIGURE 14

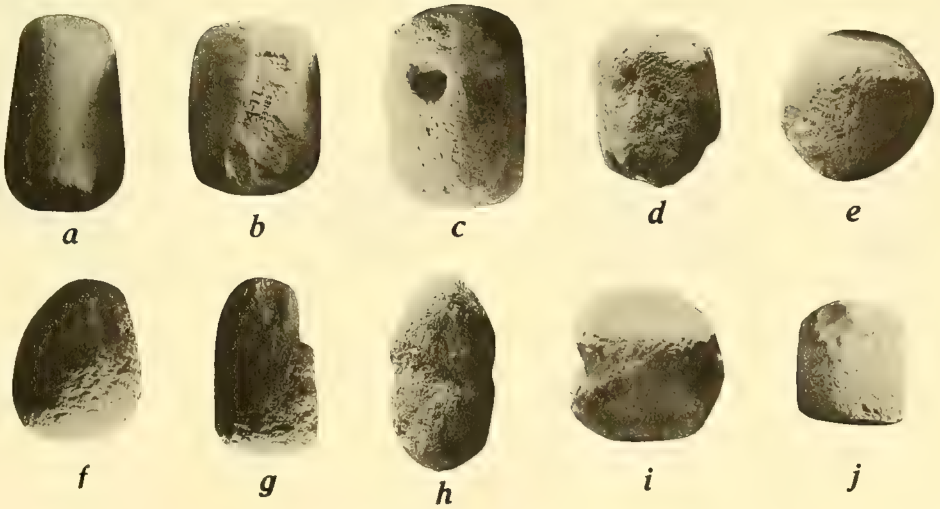
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FIGURE 15

FIGURE 16. Bark beaters. Mayapan. Limestone. Scale approx. 1/4.

a: No. 54-61. Fragment. Very fine white and reddish limestone. 6.3 × 5.3 × 4.1 cm. Both faces flat, with triangular grooves. Hafting groove, 1.4 cm wide, 0.5 cm deep, continuous around end. Lot A-95.

b: No. 55-587. Hard, fine white limestone. 8.8 × 5.3 × 3.6 cm. Both faces flat, with triangular grooves. Hafting groove, 1.4 cm wide, interrupted at one end. Lot A-441.

c: No. 55-580. Hard gray limestone. 8.0 × 5.2 × 4.6 cm. Both faces flat, with irregular triangular grooves. Hafting groove uninterrupted. Lot A-581.

d: No. 55-544. Fragment. Fine white limestone. 3.3 × 6.0 × 3.6 cm. Both faces flat, with triangular grooves. Lightly incised design between center grooves on one side. Hafting groove, 1.2 cm wide, continuous on fragment. Lot A-584.

e: No. 54-150. Fine gray limestone. 8.9 × 8.7 × 3.8 cm. Grooved surface lightly curved. Plain surface rubbed down. Hafting groove uninterrupted. Lot A-115.

f: No. 53-104. 9.4 × 7.3 × 4.0 cm. Broken. One surface worn. Both faces convex, with irregular grooves. Uninterrupted hafting groove, 1.2 cm wide. Lot C-31.

g: No. 54-6. 8.5 × 6.5 × 5.2 cm. Both faces convex, one with irregular grooves, the other worn nearly plain. Hafting groove uninterrupted. Lot A-92.

h: No. 55-586. Fine white limestone. 9.0 × 7.2 × 4.3 cm. Both faces slightly convex. One has grooves partly filled with plaster; the other is smooth. Uninterrupted hafting groove, partly filled with plaster. Lot A-441.

i: No. 55-297. Fine limestone. 10.6 × 7.5 × 3.8 cm. Both surfaces flat and smooth. Hafting groove interrupted at one end, 1.4 cm wide, traces of plaster. Lot A-569.

j: No. 54-149. 9.5 × 7.7 × 3.6 cm. Both faces smooth. Interrupted hafting groove. Traces of plaster on one end. Lot A-115.

k: No. 55-607. Hard, flintlike limestone. 7.5 × 5.8 × 3.0 cm. Both faces smooth, one slightly convex. Hafting groove uninterrupted, 0.9 cm wide. Lot A-536.

FIGURE 17. "Pot lids." Mayapan. Limestone. Scale approx. 1/4.

a: No. 55-214. Very poor limestone. 15.5 cm diam.; 3.6 cm thick. Both faces crudely chipped at edge. Lot A-406.

b: No. 53-174. 14.0 cm diam.; 1.8 cm thick. Edges chipped on both surfaces. Lot A-71.

c: No. 54-117. Poor, shell-filled limestone. 10.6 cm diam.; 1.7 cm thick. Edges chipped from both sides. Lot A-131.

d: No. 56-76. 9.0 cm diam.; 1.5 cm thick. Both surfaces smooth, with chipped edges. Lot A-159.

e: No. 55-626. Hard, buff limestone. 8.2 cm diam.; 2.2 cm thick. Both faces chipped. Lot A-155.

f: No. 55-627. Fine hard limestone. 7.3 cm diam.; 3.0 cm thick. Chipped surfaces. Lot A-155.

g: No. 55-114. 9.5 cm diam.; 3.7 cm thick. Edge cut or ground. Lot C-115.

h: No. 55-313. 7.5 cm diam.; 2.3 cm thick. One surface flat, the other rounded; unaltered surface of rock (?). Lot A-508.

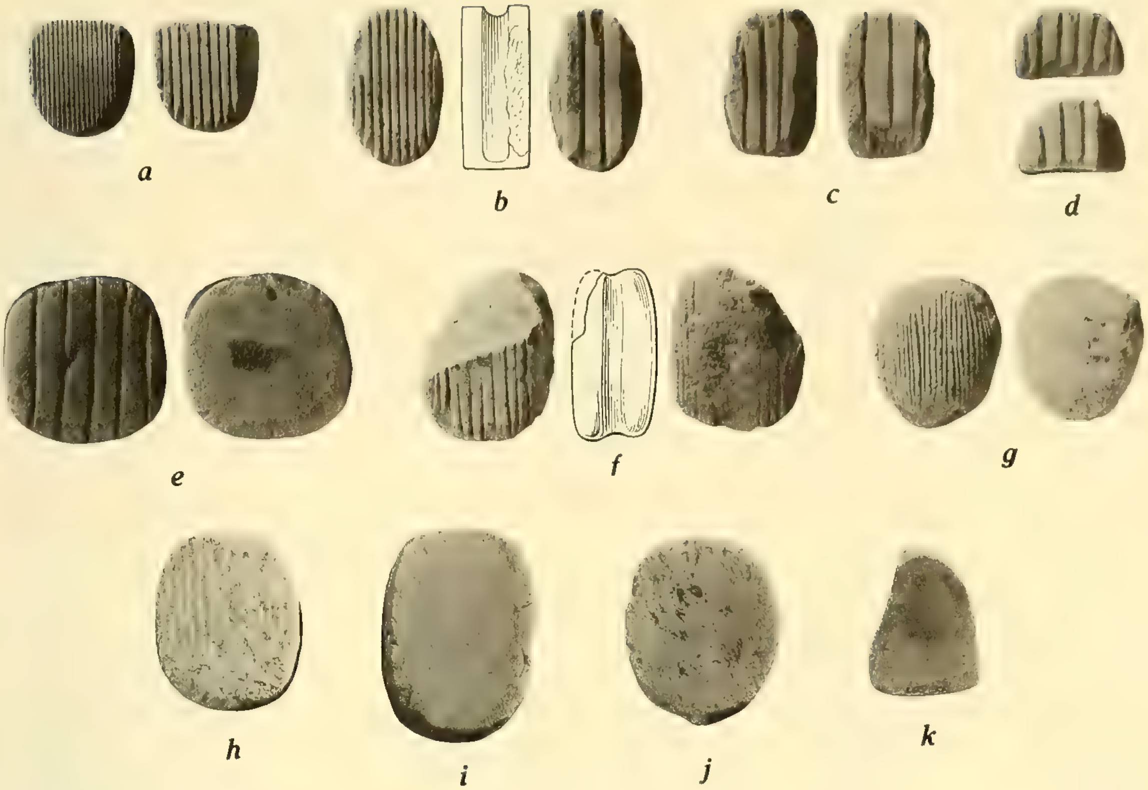
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FIGURE 16

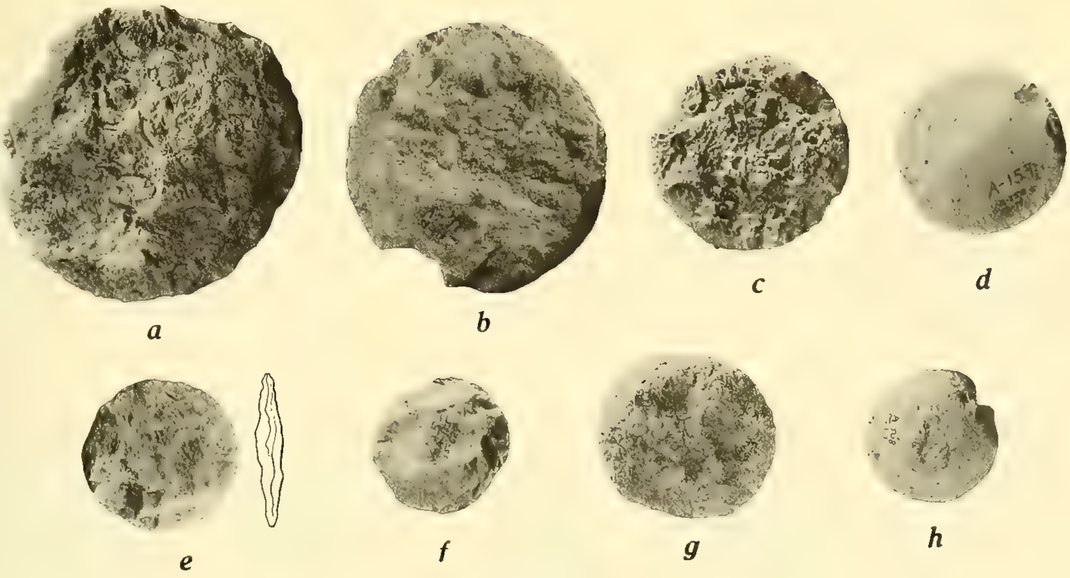
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FIGURE 17

FIGURE 18. Polishing pebbles. Mayapan. Limestone. Scale approx. 1/2.

a: No. 55-634. Hard limestone. Flat under surface. Other surfaces smeared with plaster. 6.7 × 3.9 × 3.1 cm. Lot A-444.
b: No. 55-310. Hard, fine limestone with polished surface. 6.3 × 5.2 × 2.5 cm. Plaster on unused surfaces. Lot A-510.
c: No. 55-300. Gray, fine limestone. 5.7 × 3.5 × 1.8 cm. Traces of plaster on all surfaces. Lot A-559.
d: No. 54-168: Fine-grained gray pebble with polished facet. 6.0 × 4.4 × 2.7 cm. Lot A-118.
e: No. 52-175. Fine-grained white and gray pebble. 5.5 × 3.0 × 1.2 cm. Both faces have flattened rubbing facets. Near Str. DD-4. Lot A.
f: No. 55-301. Hard white pebble with 2 round polishing facets on opposite sides. 4.4 cm diam. × 2.6 cm. Faint traces of red pigment on surface. Lot A-554.

FIGURE 19. Various fine abrading tools. Mayapan. Scale approx. 1/2.

a: No. 56-87. Piece of flint (?) with one flat polished surface. 3.6 × 3.4 × 1.8 cm. Opaque, veined gray stone. Lot A-259.
b: No. 55-372. Fine white limestone pebble. 4.3 × 4.2 × 2.2 cm. Flattened facets on faces; 3 concave facets on sides. Lot C-93b.
c: No. 54-42. Pebble of fine white limestone. 3.8 × 2.4 × 1.4 cm. Rounded groove 0.7 cm deep in center, curved longitudinally. Flattened facet on one side. Lot A-95.
d: No. 53-139. Very fine white limestone. 3.5 × 2.5 × 2.4 cm. Gently rounded rubbing facets. Lot C-44.

FIGURE 20. Unidentified limestone forms. Mayapan. Scale approx. 1/2.

a: No. 55-291. Cube of hard white limestone. 5.7 × 5.7 × 5.3 cm. Lot A-559.
b: No. 56-4. Broken abrading tool (?). 6.6 × 4.1 × 3.0 cm. Oval section with flattened surface longitudinally concave on under side. Lot A-95.
c: No. 55-27. Broken honing stone (?). 7.1 × 4.0 × 3.0 cm. Fine gray limestone. Semicircular section; uneven depression on flat surface of under side. Lot A-153.
d: No. 54-142. Fragment of hard gray stone probably used for whetting. 9.4 × 2.6 × 1.7 cm. Lot A-114.
e: No. 52-99. Cylindrical fragment of fine white stone. Diam. 1.5 cm. Lot A-7.
f: No. 52-151. 5.5 × 2.9 × 2.2 cm. Rectangular section. All surfaces rough. Lot A-16.
g: No. 56-85. 6.1 × 3.4 × 2.0 cm. Rectangular section. Traces of plaster on surface. Lot A-175.
h: No. 52-152. 4.7 × 2.3 × 1.2 cm. Lot A-22.
i: No. 53-264. Stone plug (?). 3.0 cm diam.; 7.3 cm long. Round in section. Rough surface. Lot A-149.
j: No. 53-186. White and pink limestone. 4.6 × 4.1 × 2.1 cm. Small rubbing stone (?). Lot A-77.
k: No. 54-263. Perforated stone. 7.0 × 6.1 × 2.6 cm. Biconically drilled hole in center, min. diam. 1 cm. Lot A-149.
m-p: Nos. 55-131, 56-26, 55-35, 55-195. Pieces of iron-stained clayey limestone with rubbed surfaces. Material is soft and powdery, with opaque white specks in two stones. m is purplish, others earthy orange-red. Lots A-182, A-587, A-223, A-188.
q: No. 55-256. Flat fragment of compact reddish limestone or onyx marble. 1.3 cm thick. One surface very slightly concave. Lot A-207.

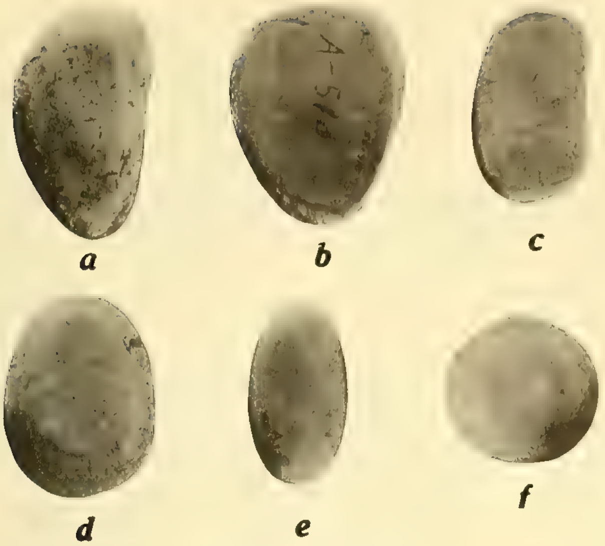
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FIGURE 18

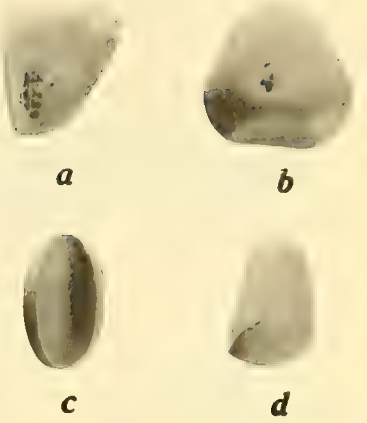

FIGURE 19

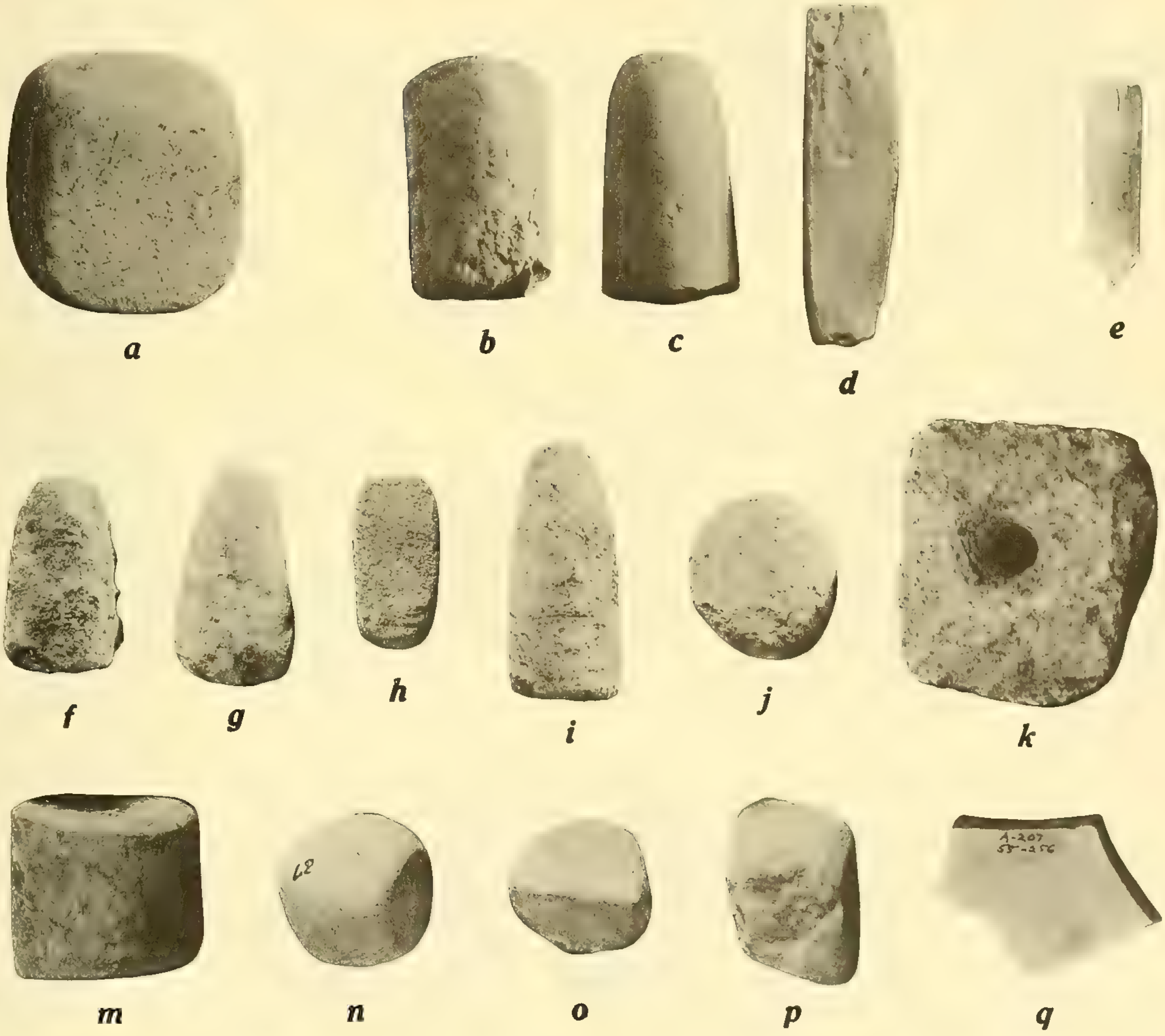
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FIGURE 20

FIGURE 21. Lava metates. Mayapan. Dark gray vesicular lava. Scale approx. 1/5.

- a: No. 53-238. Tripod metate. 35 × 26 × 18 cm. Grinding surface rectangular with rounded corners, curved in one direction. Two small round legs, and one larger, oval and tapering; all resting on flattened surfaces. Lot C-51.
- b: No. 54-158. Tripod metate. 30 × 21 × 13 cm. Grinding surface rectangular with rounded corners, curved in one direction. Two short round legs, and one large, rectangular. Lot A-115. Mano, No. 54-157, found near by.
- c: No. 55-287. Fragment of tripod metate. Width 28 cm. Broken semicircular stump of leg aligned with edge. Grinding surface worn from thickness of 6 cm at edge to 2.4 cm at break; curved strongly lengthwise and lightly laterally. Found in late construction. Lot A-568.
- d: No. 55-14. Fragment of metate. Original width about 21 cm. Two round legs, 1 cm high. Grinding surface curved in one direction. Thickness 2 to 3 cm. Lot A-501.
- e: No. 55-294. Fragment of metate, 18.5 cm max. Grinding surface curved longitudinally. Round legs about 4.5 cm high. Edge rounded. Lot A-559.
- f: No. 52-111. Corner leg of metate, aligned with edge of grinding surface. Ht. 6.8 cm. Leg is triangular in horizontal section, but with inner surface strongly curved. Remnant of grinding surface shows slight troughing. Found under construction, Lot A-13.
- g: No. 53-235. Fragment of metate. Width 24.5 cm; ht. 11.5 cm. Rectangular tapering leg. Grinding surface curved in one direction. Corners rounded. Found in late construction, Lot A-55.
- h: No. 54-154. Grinding stone? 16.0 × 10.5 × 3.3 cm. Grinding surface flat, with sharp edges, and sides curving away to rough back. Lot A-115.
- i: No. 53-179. Fragment of metate. Trace of round leg, 8 cm diam. Remnant of grinding surface shows no curvature. Lot A-52.

FIGURE 22. Tools of volcanic stone. Mayapan. Scale approx. 1/4.

- a: No. 55-602. Fragment of mano; vesicular lava. Oval section 7.3 × 5.8 cm, with flattened facet. Lot A-501.
- b: No. 55-603. Fragment of mano; compact gray volcanic or igneous rock. Round section, 7.2 × 6.3 cm, with flattened facet. Lot A-554.
- c: No. 55-578. Fragment of mano; dark vesicular lava. Square section with rounded corners and well polished surfaces, 4.6 × 4.5 cm. Lot A-442.
- d: No. 55-298. Fragment of mano; compact dark volcanic or igneous stone (basalt?). Greatest diam. 6.3 cm. Section below knob trifaceted. Lot A-501.
- e: No. 52-133. Rubbing stone (?). Vesicular lava. 16.1 × 7.6 × 4.3 cm. Polished surface strongly curved longitudinally. From surface of Str. P-134b.
- f: No. 54-153. Hammerstone (?). Vesicular lava. Form, spheroid, but tending slightly toward a cube; 5 to 6 cm. Lot A-115.
- g: No. 56-81. Cylindrical hammer. 6.3 cm diam.; 9.7 cm long. Vesicular lava. Both ends pecked. Lot A-251.
- h: No. 54-222. Rubbing and pounding stone (?). Vesicular lava. 5.0 × 4.2 × 8.7 cm. Three flat rubbed facets on sides. Ends battered. Lot A-112.
- i: No. 55-292. Fragment of mano re-used as pounding tool (?). Vesicular lava. Square section with rounded corners, 6.5 × 6.4 cm. Facets slightly concave longitudinally; one smoothed. Ends pecked or pounded. Lot A-554.
- j: No. 53-191. Unidentified fragment of vesicular lava. 7.8 × 4.8 × 2.7 cm. Both faces flat, one with rubbed concavity. Str. K-52. Lot A.
- k: No. 55-599. Fragment of unidentified tool; vesicular lava. Max. diam. 7.8 cm; thickness to break 4.3 cm. Surface shown is convex and rubbed smooth. Below this, groove about 1 cm deep encircles artifact, which is broken at center of this groove. Lot A-554.

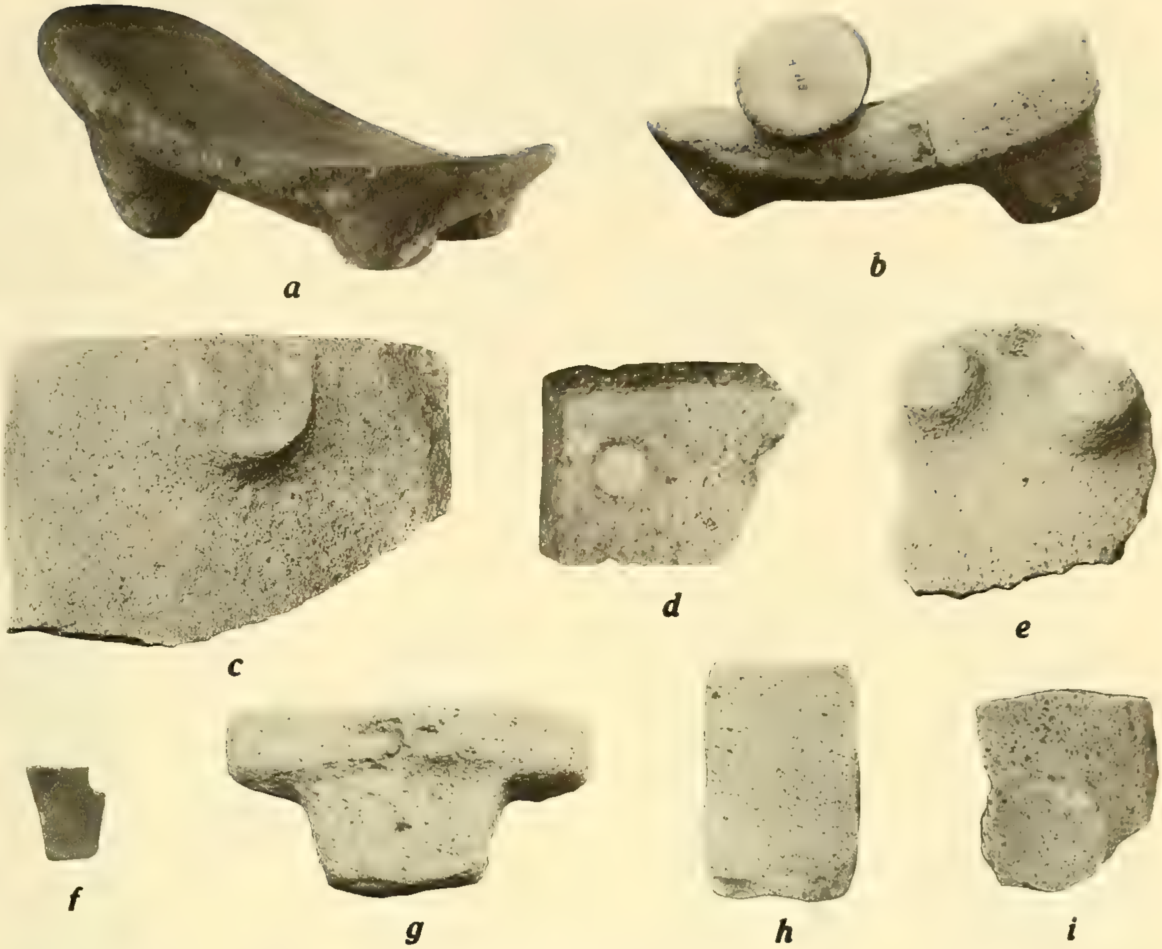

FIGURE 21

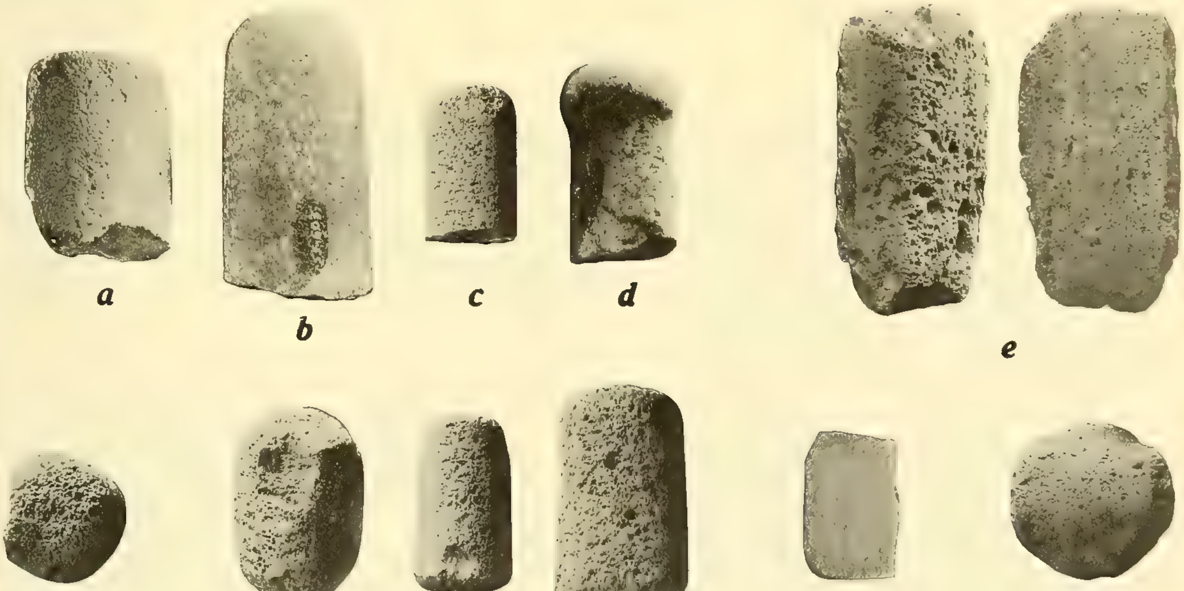
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FIGURE 22

FIGURE 23. Miscellaneous stone tools. Mayapan. Scale approx. 2/5.

a: No. 53-208. Fragment of whetstone; gray, gritty sandstone. 13.7 × 6.0 × 3.8 cm. Both faces concave and meet at acute angle in semicircular break, where artifact is completely worn through. Concavities smooth but somewhat irregular. Lot C-55.

b: No. 54-155. Fragment of whetstone or grinding metate; fine reddish sandstone. 9.8 × 6.2 × 4.9 cm. Sharply concave on one surface, flat on other. Thickness at break 1.4 cm. Lot A-115.

c: No. 52-196. Fragment of whetstone; gritty reddish sandstone. 7.8 × 6.4 × 1.8 cm. One surface flat, other slightly concave. Round groove on edge, about 3 mm wide, 1 mm deep. Near Str. Q-35. Lot A.

d: No. 56-203. Fragment of whetstone; gray sandstone. 6.4 × 3.7 × 2.5 cm. Surface shown concave in one direction; opposite surface flat, with concavity thinning stone to 0.5 cm at break. End rounded. Lot A-50.

e: No. 52-36. Fragment of dark gray sandstone tool. 7.8 × 3.3 × 1.6 cm. Side shown slightly concave at center; opposite side lightly convex. Group Z-8. Lot A.

f: No. 55-238. Fragment of honing stone; fine gray sandstone. 5.3 × 5.0 × 0.7 cm. Both surfaces equally worn to 0.5 mm at break. Lot A-415.

g: No. 55-488. Honing stone; sericite schist. 8.8 × 3.0 × 1.7 cm. Deep irregular grooves on one face. Lot A-587.

h: No. 54-77. Fragment of schist; honing stone (?). 6.0 × 3.8 × 2.2 cm. Lot C-79.

i: No. 53-226. Fragment of dark red petrified wood. 4.8 × 2.0 × 0.8 cm. Narrow edge oblique to broken surfaces, and highly polished. Lot C-54.

j: No. 53-226 (second piece). Fragment of dark red stone. 7.7 × 7.3 × 0.8 cm. Opposite surface flat and smooth but unpolished. Lot C-54.

k: No. 52-19. Flat tool of hard, dark red stone. 8.2 × 6.5 × 1.0 cm. Both surfaces highly polished, one very lightly concave. Str. L-85. Lot A.

FIGURE 24. Polished celts. Mayapan. Scale approx. 1/2.

a: No. 54-248. Fine-grained black stone. 5.4 × 3.5 × 1.7 cm. Low polish on broad surfaces only. Mid-section, flattened oval. Edge smooth. Lot A-150.

b: No. 52-29. Fine-grained dark green stone. 6.5 × 3.0 × 1.7 cm. High polish at edge, fading toward butt end. Subrectangular mid-section, with lightly curved sides. Str. J-89a. Lot A.

c: No. 55-83. Fine-grained, very dark blue-black stone. 7.6 × 4.5 × 2.3 cm. Flattened oval section. High polish on edge only, fading toward butt. Edge slightly nicked. Lot A-544.

d: No. 52-217. Dark green, fine-grained stone. 5.5 × 4.1 × 1.9 cm. Polished on broad sides. Corner broken and later smoothed. Near Str. R-152b. Lot A.

e: No. 52-79. Very dark blue-black stone. 4.7 × 3.3 × 1.3 cm. High polish on broad faces only. Edge sharp and unused. Lot C-3.

f: No. 55-264. Black fine-grained stone. 3.9 × 3.0 × 1.5 cm. Pecked surface, with imperfect polish near edge only. Lot A-584.

g: No. 54-40. Jadeite. 11.4 × 5.7 × 3.0 cm. Edge slightly nicked. Polish on all sides, extending to rough butt. Lot A-95.

h: No. 54-262. Greenstone (quartzite with chlorite and calcite). 9.2 × 6.0 × 2.5 cm. Low polish, on one side only. Edge nicked and battered. Lot A-149.

FIGURE 25. Small polished carvings. Mayapan. Scale approx. 1/2.

a: No. 52-77. Jadeite pendant. 4.4 × 2.7 × 1.5 cm. Gray-green, mottled jade. Edges of carving softened by wear. Flaw on left cheek. Lateral biconical drilled perforation near top of head. Unsymmetrical biconical holes in earplugs and collar. Lot C-3.

b: No. 55-141. Jadeite pendant. 4.9 × 3.7 × 1.9 cm. Intense blue-green stone of even tone, highly polished. Carving consists of grooving and very fine incision. Biconical drilled perforation from side to side of head, near top. Lot C-123.

c: No. 54-74. Carved turtle. 7.2 × 5.9 × 2.1 cm. Nephrite; blue-green, flecked stone with even, high polish. Lot C-79.

d: No. 53-170. Olmecoid mask. Basalt. 6.6 × 6.6 × 3.2 cm. Dark gray, almost black stone with low polish. Back hollowed to depth of 0.5 cm. One side broken, with traces of red paint on worn surface of old break. Two biconical drilled holes through back corner of left ear. Drilled pits at corners of mouth and nostrils. Eyes hollowed and with unfinished surface, as if for inlay. Lot A-67.

e: No. 52-8. Unidentified ornament of pyroxene granulite, with jadeite. 6.8 × 6.6 × 0.9 cm. Once broken, but with edge of break smoothed. Tiny biconical drilled perforation. Group R-32. Lot A.

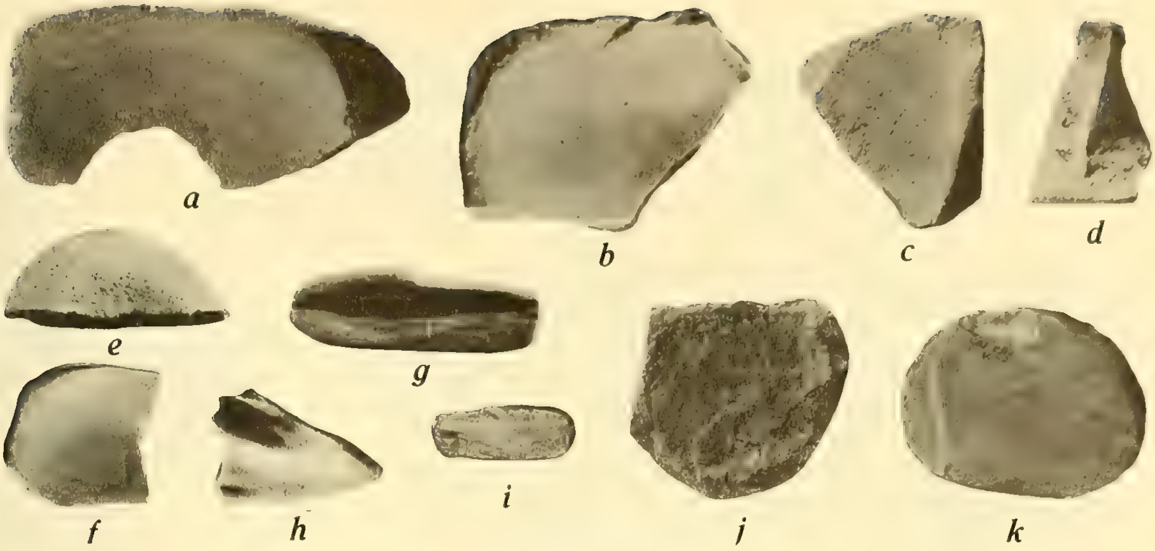
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FIGURE 23

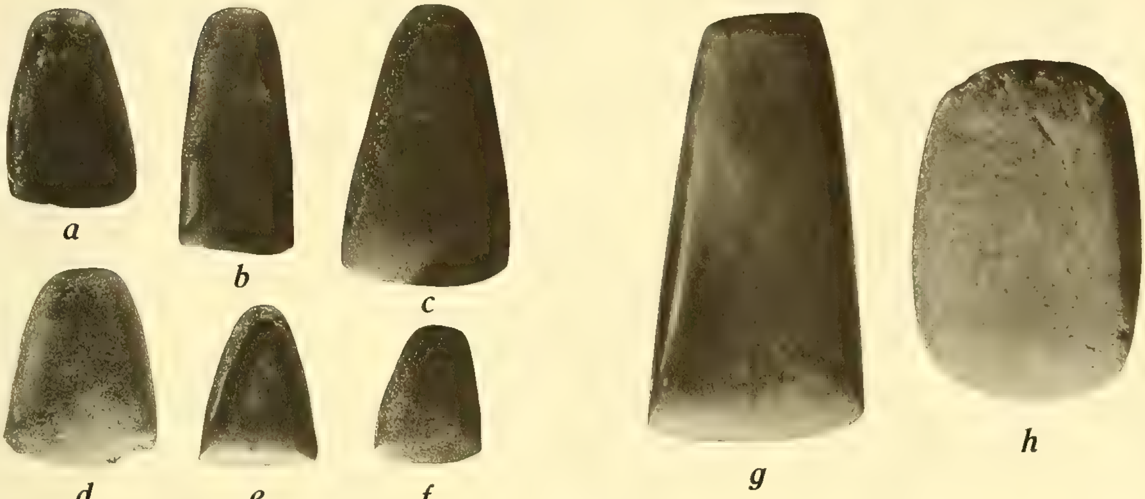

FIGURE 24

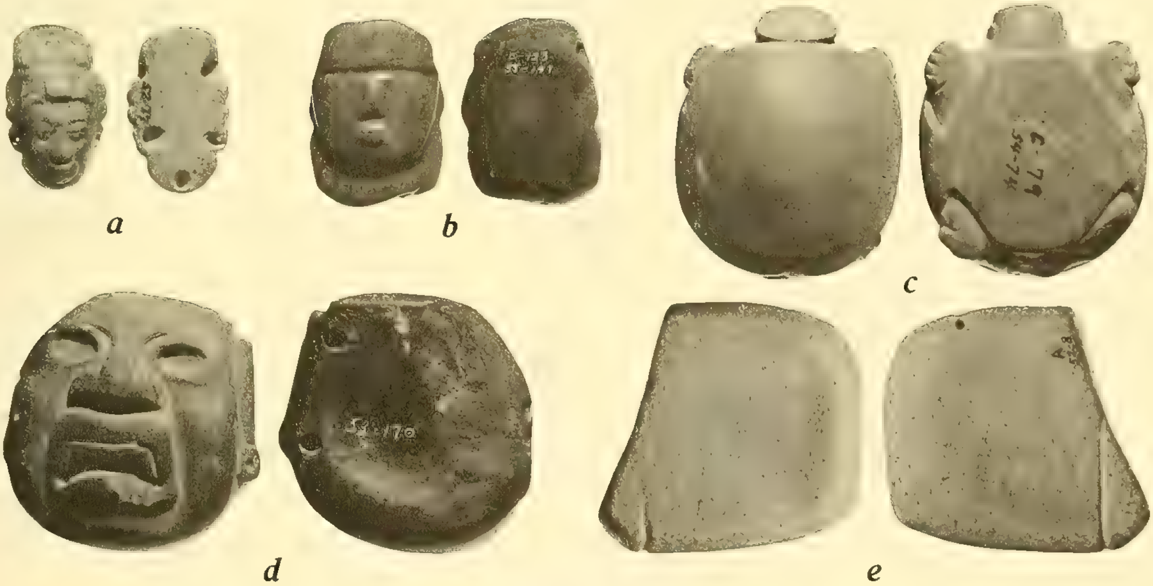

FIGURE 25

FIGURE 26. Stone beads and gems. Mayapan. Scale approx. 3/4.

a: No. 54-231. Limestone bead 17 × 15 × 13 mm. Very soft stone cut with two spiral grooves. Perforation cylindrical, approx. 1 mm diam. Traces of plaster on surface. Lot C-90.

b: No. 55-51. Fragment of large tubular bead. Diam. 22.5 to 24 mm; length 60 mm. Pyroxene granulite containing jadeite. Gray-green, with red inclusions; low polish. Flattened on one side. Perforation probably biconical, now broken in middle, 5 to 11 mm diam. Lot A-522.

c: Four carved tubular beads. No. 54-211: 28 × 13 × 11 mm; jade, with burned surface; cylindrical perforation; section rounded-triangular; Lot C-81. No. 53-199: 27 × 14 × 12 mm; blue-green, highly polished jade; biconical perforation; section rounded-quadrangular; Lot C-4. No. 52-77: 24 × 8 mm; light green jade with bright speckle; triangular section, end broken; conical drilled perforation; Lot C-3. No. 54-75: 14 × 8 × 5 mm; light green jade, low polish; band at one end; rectangular section; biconical perforation; Lot C-79.

d: No. 53-113. Large subspherical bead of very light greenish mottled jade, with low polish. Diam. 32 to 39 mm. Two flattened facets. Groove cut in one facet, 15 mm long. Biconical perforation, 1.1 to 7 mm diam. Lot C-32.

e: Subspherical jade beads from various locations. Largest 25 mm. Note four radiating grooves on second bead, top row.

f: Cylindrical and discoidal jade beads. All but long tubular bead and small discoidal bead are burned. Discoidal beads are 12, 7, and 5.5 mm in height.

g: Barrel-shaped jade beads. Longest is 30 mm. Sections round to almost rectangular.

h: Irregular beads and pendants of fine, polished jade. Largest 22 mm max.

i: Flattened barrel-shaped jade beads. Largest 34 mm long.

j: No. 52-79. Calcareous brown pebble, highly polished. Approx. 18 mm. Lot C-3.

k: Nos. 55-140, 54-212. Squares of iron pyrites. Larger (1.7 × 1.6 cm) is 1 mm thick and has two drilled holes. Smaller (1.3 × 1.1 cm) is 2 mm thick, with edges beveled back from face. Lots A-191, C-81.

m: No. 55-385. Unworked pebble of mottled blue-green jade. 23 × 21 × 15 mm. Traces of plaster adhering to surface. From cache, Lot C-93a.

n: No. 54-251. Light green jade pebble, possibly shaped. 27 × 16 × 12 mm. Oval section. From cache, Lot C-85b.

o: No. 54-239. Piece of jadeite. 30 × 18 × 6 mm. Flat parallel polished surfaces. Trace of conical perforation on lower edge. Lot C-92.

p: Three broken pieces of jade with polished surfaces. Two are from caches, Lots C-93a, C-76; the third from fill, Lot C-4.

q: No. 52-136. Fragment of quartzite. 29 × 22 × 3 mm. One surface slightly convex and polished. Edges square-cut. Lot A-8.

r: Three pieces of rock crystal. Largest 12 mm. All from caches, Lots C-93a, C-85b.

s: No. 55-353. Small knob of unidentified opaque blue calcareous stone; decomposed jade (?). Lot A-526.

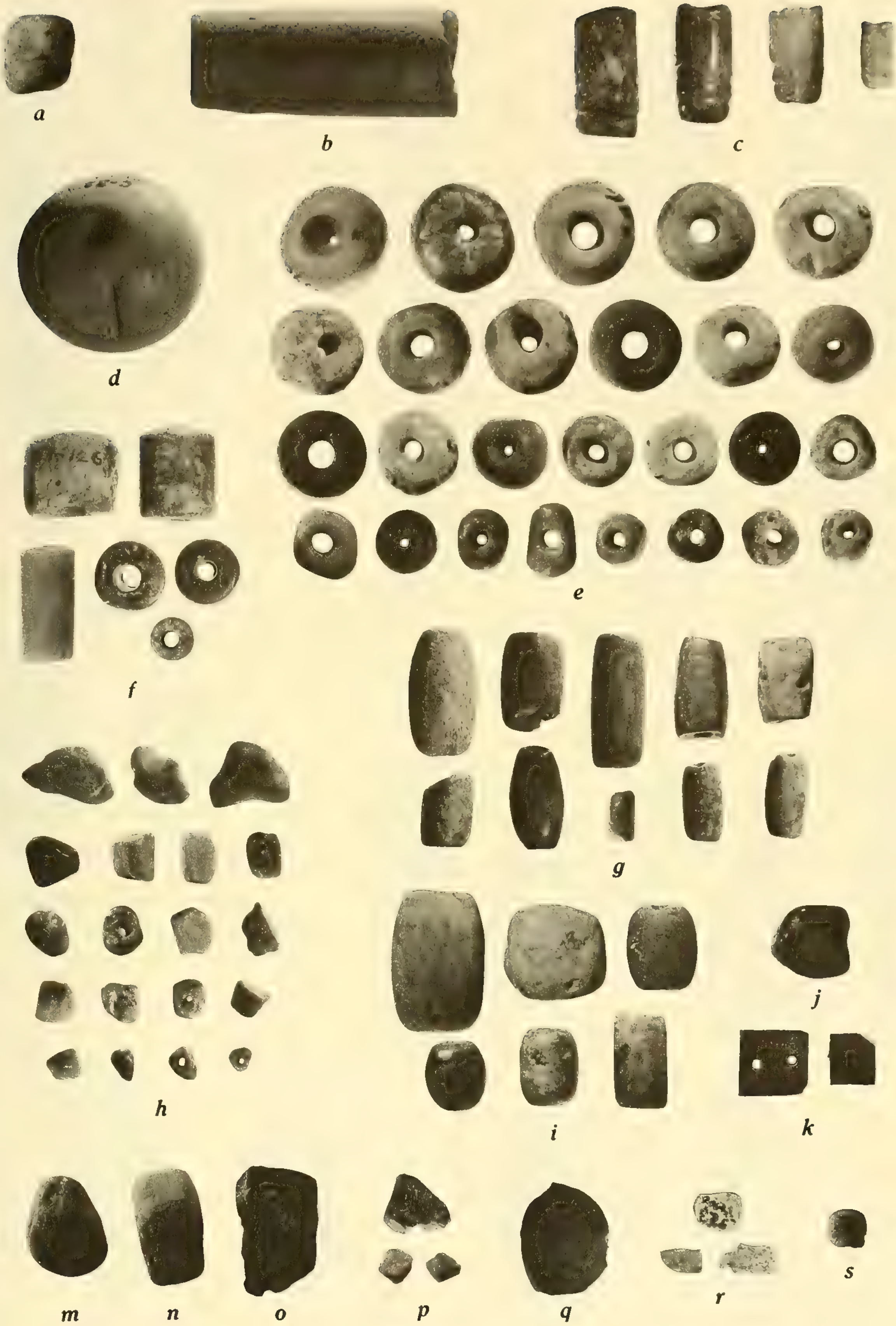
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FIGURE 26

FIGURE 27. Stone carving and ritual flints. Mayapan. Scale of flints approx. 2/5. All bifacially flaked.

a: No. 55-133. Carving of unidentified heavy gray-green stone. 21.3 × 11.6 × 4.5 cm. Back broken or unfinished. Form tapers to upper edge. Lower edge broken. Lot A-176.

b: No. 53-214. Long blade of opaque light gray chert, with somewhat grainy texture. 28.2 × 4.6 × 1.6 cm. Wt. 205 g. No signs of use. Lot C-59.

c: No. 53-152. Large blade broken in three sections. 28.5 × 7.0 × 1.9 cm. Wt. 400 g. Cream opaque chert, spotted with ochre and rose. Spot flaw on one side. From cache, Lot C-49.

d: No. 53-153. Large blade broken in two sections. 17.4 × 6.2 × 1.3 cm. Wt. 155 g. Opaque cream-colored chert tinged with ochre. From cache, Lot C-49.

e: No. 53-148. Fragment of chipped blade of dark chert, heavily patinated. 11.5 × 6.0 × 1.4 cm. Lot C-49.

f: No. 54-127. Blade with rounded base. 11.1 × 5.0 × 1.5 cm. Wt. 62 g. Milky, rose-tinged chert. Edges retouched, and one probably used. Lot A-95.

g: No. 54-41. Point with rounded base. 9.65 × 4.4 × 0.8 cm. Wt. 40 g. Translucent buff chert with light patina. Fine retouch on edges, slightly worn. Tip broken. Lot A-95.

h: No. 54-31. Eccentric pelt-shaped flint. 6.0 × 4.0 × 0.6 cm. Opaque buff, tinged with red. Made from surface flake with edges retouched from both sides. Lot C-65.

i: No. 52-205. Notched blade of translucent dark chert with heavy white patina. Broken. 8.5 × 3.9 × 1.0 cm. Near Str. BB-7. Lot A.

j: No. 55-196. Eccentric flint of white chert with grainy surface. 8.9 × 2.9 × 0.7 cm. Lot A-187.

k: No. 55-339. Eccentric flint of opaque white chert. 8.5 × 3.2 × 0.9 cm. Lot A-520.

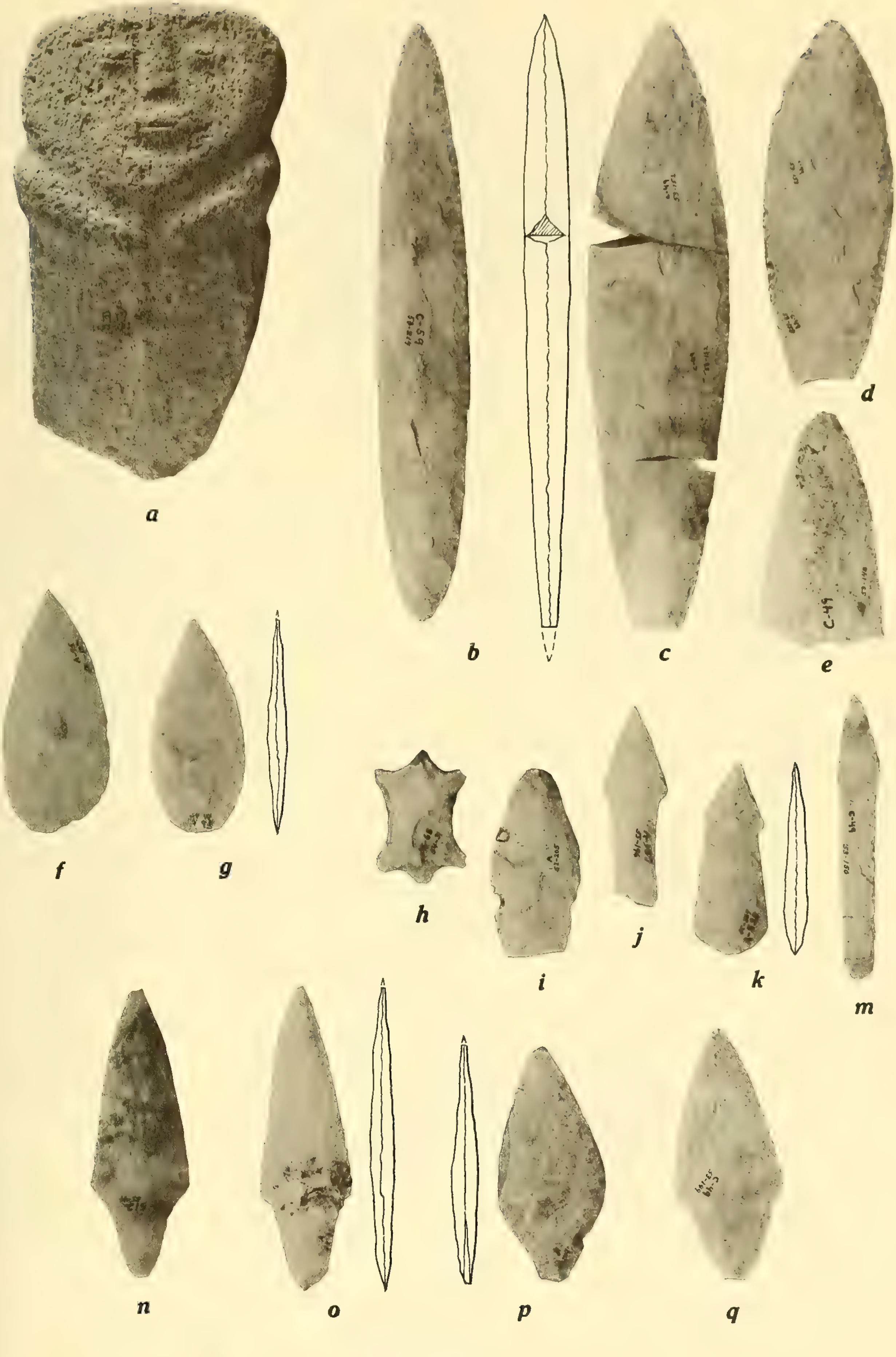
m: No. 53-150. Eccentric flint of opaque white and yellow chert. 12.5 × 1.9 × 0.55 cm. Retouching on edges may be smoothed by wear. Lot C-49.

n: No. 55-44. Stemmed point. 13.0 × 4.5 × 1.1 cm. Wt. 55 g. Translucent buff chert, streaked with gray. Trace of cortex at tip of stem. Form slightly humped. Lot A-512.

o: No. 52-31. Stemmed point. 13.7 × 4.2 × 1.1 cm. Wt. 50 g. Semitranslucent, heavily patinated chert, white, tinged with rose. Edge shows some wear. Location unknown. Lot A.

p: No. 52-17. Stemmed point. 10.5 × 4.9 × 1.3 cm. Wt. 58 g. Translucent buff chert with white patina. Near Group AA-26. Lot A.

q: No. 53-149. Stemmed point. 11.4 × 5.0 × 0.8 cm. Wt. 45 g. Dark translucent chert with white patina. Possibly from cache. Lot C-49.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C-49

FIGURE 27

FIGURE 28. Flint knives. Mayapan. Scale approx. 2/5. All bifacially flaked.

"Sacrificial knives." a: No. 53-1; heavily patinated cream-colored chert; 17.3 × 4.5 × 1.3 cm; 95 g; no signs of use; long tip apparently broken; with skeleton in trench north of Str. Q-79; Lot C-8. b: No. 53-25; translucent dun-colored chert, veined and flawed; 17.2 × 4.1 × 1.5 cm; 94 g; no evidence of use; tip broken; with skeleton in trench north of Str. Q-79; Lot C-8. c: No. 52-16; opaque cream chert, flawed; 15.8 × 4.3 × 0.9 cm; 80 g; no signs of use; Str. Z-95; Lot A. d: No. 52-9; opaque or heavily patinated white chert; 13.1 × 3.7 × 1.2 cm; 54 g; no signs of wear; tip broken; between Strs. K-48 and K-50; Lot A. e: No. 54-214; heavily patinated white chert, flawed; 12.3 × 3.4 × 0.7 cm; 48 g; irregular form; edges worn (?); tip broken; Lot C-81. f: No. 53-2; heavily patinated white chert; 11.6 × 4.5 × 1.1 cm; 54 g; unworn; tip broken; found with fragment of bone adhering to one side, with skeleton in trench north of Str. Q-79; Lot C-8. g: No. 55-503; white and gray chert; 10.4 × 3.9 × 1.0 cm; 35 g; Lot C-144.

Broad knives (?). h: No. 55-638; opaque, cream-colored chert; 6.8 × 3.6 × 1.35 cm; 30 g; humped form; edges flawed by use; Lot B-6. i: No. 52-228; opaque grainy white chert; 6.2 × 3.4 × 1.2 cm; 21 g; edges apparently used; tip broken; Group AA-47; Lot A. j: No. 53-96; opaque, cream chert, badly flawed; 7.1 × 3.8 × 1.3 cm; 32 g; edges chipped by use (?); Lot D-45. k: No. 52-204; opaque rose-tinged cream chert with deep flaws; 8.7 × 4.5 × 1.4 cm; 44 g; near Str. BB-7; Lot A. m: No. 52-14; opaque red and cream chert; 7.5 × 4.1 × 1.0 cm; 35 g; humped form; no indication of use; near Str. Q-244a; Lot A. n: No. 52-91; heavily patinated dark chert; 7.1 × 4. 3 × 1.5 cm; 44 g; point broken; one edge heavily worn; Group K-44; Lot A.

Long knives. o: No. 52-23; opaque white or heavily patinated chert; 12.8 × 4.6 × 1.5 cm; 91 g; apparently worn; just north of city wall; Lot B-1. p: No. 55-243; semitranslucent gray and buff chert with opaque buff streak; 13.8 × 5.2 × 2.0 cm; 130 g; flaw on one side; Lot A-239. q: No. 55-271; opaque white veined chert; 12.2 × 5.2 × 1.4 cm; 81 g; tip broken; Lot A-576. r: No. 52-83; opaque white chert, badly flawed; 11.0 × 3.5 × 1.0 cm; 46 g; edges roughened by use (?); Str. Z-79; Lot A. s: No. 55-178; semitranslucent cream, rose-tinged chert; 10.3 × 3.2 × 1.4 cm; 37 g; signs of use on convex edge; tip broken; Lot A-553. t: No. 52-15; opaque white chert; 9.8 × 2.9 × 1.2 cm; convex edge probably used; Group Y-2; Lot A. u: No. 55-173; semitranslucent bluish-gray chert; 11.0 × 3.1 × 1.3 cm; 36 g; edges retouched and probably used; Lot A-559.

Short pointed blades. v: No. 52-86; semitranslucent buff chert, patinated; 7.4 × 4.0 × 1.6 cm; 40 g; edges apparently worn; Group Z-29; Lot A. w: No. 52-12; opaque white rose-tinged flint; 7.3 × 3.5 × 1.1 cm; 22 g; unused; near Group S-13; Lot A. x: No. 55-171; semitranslucent buff, patinated chert, flawed; 7.9 × 3.3 × 0.9 cm; 20 g; edges unretouched; Lot A-564. y: No. 55-262; semitranslucent light gray chert; 7.0 × 3.0 × 1.4 cm; 18 g; edges roughened by use (?); streak of dark reddish unidentified substance adhering to one side; tip broken; Lot A-584. z: No. 52-165; translucent buff and gray, rose-tinged chert; 7.4 × 3.2 × 1.3 cm; 23 g; one edge shows signs of use; tip broken; Lot A-15. aa: No. 55-215; veined gray-blue and white chert; 6.4 × 2.7 × 0.75 cm; one edge shows signs of use; tip broken; Lot C-140.

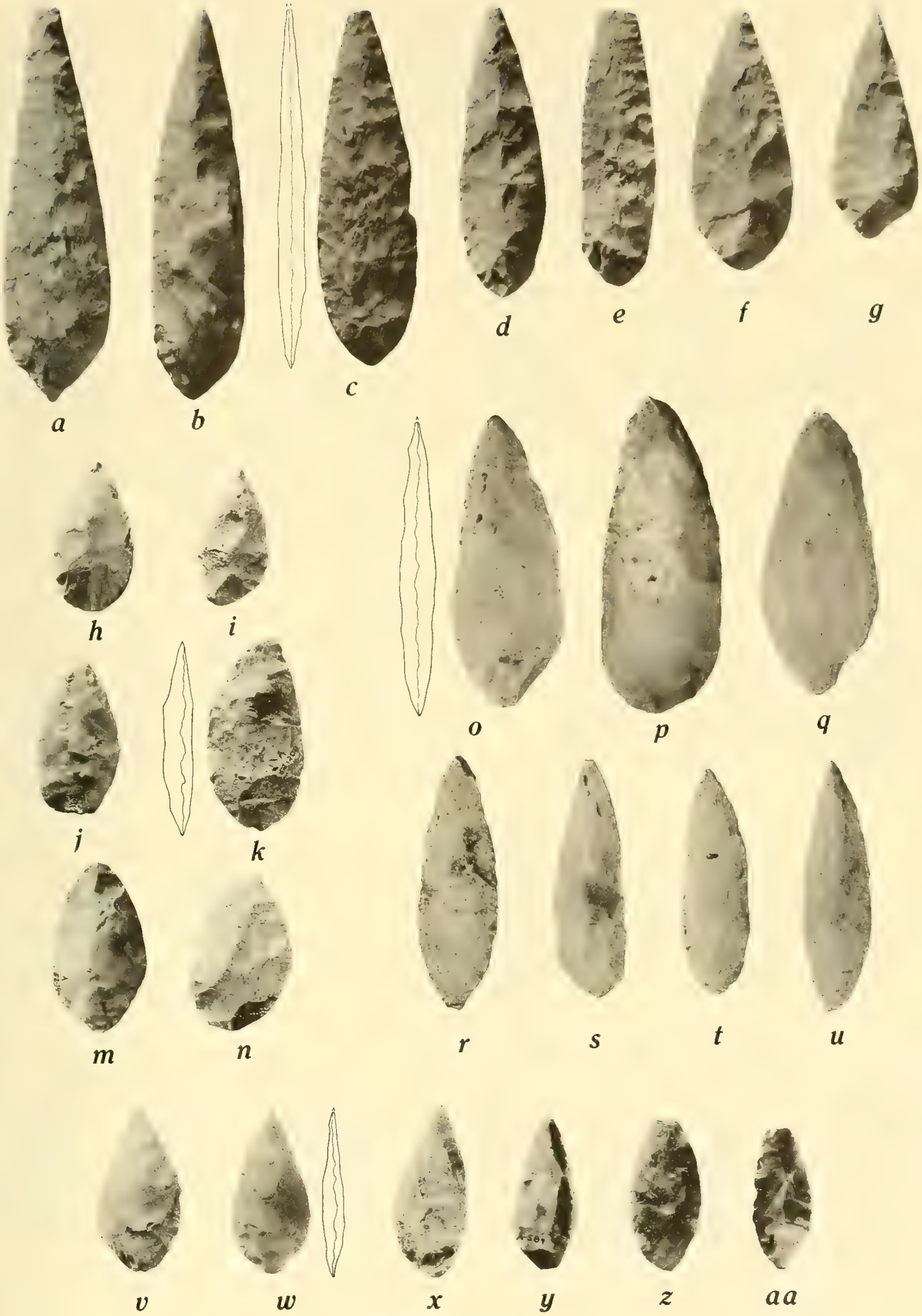
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FIGURE 28

FIGURE 29. Flint blades and points. Mayapan. Scale approx. 2/5. All bifacially flaked.

Blades pointed at both ends. a: No. 55-82; semitranslucent buff and opaque cream chert with heavy patina; 12.2 × 5.0 × 1.8 cm; 94 g; unused; Lot A-548. b: No. 55-33; opaque white, rose-tinged chert; 9.7 × 3.9 × 1.4 cm; 44 g; unused; Lot A-223.

Sharp points. c: No. 52-11; semitranslucent patinated chert; 8.0 × 3.8 × 1.3 cm; 35 g; two breaks in base; Group J-122; Lot A. d: No. 53-76; opaque white chert; 9.8 × 3.7 × 1.2 cm; 34 g; Lot D-40. e: No. 52-207; opaque white and dun chert, grainy on one face, flawed; 8.8 × 3.6 × 0.85 cm; 22 g; butt thick; sharp tip broken; near city wall in Square BB, Lot A. f: No. 55-49; semitranslucent gray chert, flawed; 8.4 × 3.4 × 1.3 cm; 27 g; base thinned, point very sharp; Lot A-521. g: No. 55-48; opaque white grainy chert; 8.9 × 3.9 × 1.2 cm; 35 g; Lot A-501. h: No. 55-245; opaque white and gray chert; 8.4 × 3.9 × 1.15 cm; 33 g; edges blunted; tip broken; Lot A-216. i: No. 55-5; semitranslucent buff-gray flint with flaws; 9.4 × 3.3 × 1.1 cm; 29 g; tip broken; one edge used (?); in cache; Lot A-208.

Miniature blades. j: No. 55-162; milky translucent chert; 6.5 × 1.3 × 0.6 cm; 3 g; edges roughened by use (?); spot of cortex remaining on one end; Lot A-404. k: No. 55-150; semitranslucent gray and buff chert; 8.9 × 1.9 × 0.95 cm; 15 g; edges chipped with use (?); Lot A-182. m: No. 54-22; semitranslucent milky fine-quality chert; 6.4 × 2.5 × 0.7 cm; 10 g; edges retouched, one used (?); three deep nicks on one face; from early stratum north of Str. Q-162; Lot C-64. n: No. 53-65; dark opaque brown chert flawed by red limestone inclusion; 8.3 × 2.8 × 1.0 cm; 19 g; unused; from burial shaft in Str. Q-95; Lot C-29. o: No. 54-223; heavily patinated chert, one side fire-blackened; 7.6 × 3.0 × 0.8 cm; 20 g; very fine retouch; Lot C-65. p: No. 55-50; opaque white grainy chert; 7.5 × 2.6 × 1.1 cm; 15 g; Lot A-524. q: No. 52-86; semitranslucent gray patinated chert; 6.4 × 2.0 × 1.0 cm; 10 g; edges worn; Group Z-29; Lot A. r: No. 53-122; opaque red-brown chert; 5.5 × 2.7 × 1.2 cm; 15 g; tip broken; base thinned to edge; Lot D-70. s: No. 52-87; sharp point of opaque white chert; 5.5 × 2.5 × 0.85 cm; max. thickness 1.0 cm above base; tip broken, small break at butt end; between Groups Z-61 and Y-2; Lot A.

Triangular points. t: No. 52-113; semitranslucent light gray chert, spot of cortex on one face; 4.2 × 3.7 × 1.5 cm; 21 g; max. thickness 1.5 cm from base; base chipped to edge, edge battered by use (?); tip broken; Lot A-13. u: No. 52-114; opaque white chert; 5.4 × 3.9 × 1.3 cm; 21 g; unused; tip broken; Lot A-13.

Sharp points with angle at base. v: No. 52-115; semitranslucent cream and buff chert; 6.8 × 2.9 × 1.2 cm; 15 g; edges appear used on point and butt; Lot A-13. w: No. 55-24; semitranslucent dark buff chert, patinated; 7.5 × 4.2 × 1.1 cm; 23 g; max. thickness 2.3 cm above base; cache; Lot C-110. x: No. 52-33; semitranslucent dun-colored chert, patinated; 6.3 × 4.3 × 1.3 cm; 29 g; max. thickness 2.1 cm above base; side retouched, used (?); tip broken; Str. M-102; Lot A. y: No. 52-116; translucent gray chert; 7.7 × 4.0 × 1.1 cm; 27 g; max. thickness 3.5 cm above base; humped form with spot of cortex; tip broken; Lot A-13. z: No. 52-81; translucent cream chert, lightly patinated; 5.6 × 3.4 × 0.9 cm; 17 g; tip broken; near Str. Z-38; Lot A. aa: No. 53-222; translucent white chert; 6.1 × 3.0 × 1.25 cm; 15 g; max. thickness 1.8 cm above base; one side used (?); Lot C-54. bb: No. 52-24; opaque cream chert; 5.3 × 3.1 × 1.0 cm; 12 g; max. thickness 2.2 cm above base; tip broken; near Str. R-182; Lot A.

Points with rudimentary stem. cc: No. 55-76; dark chert, patinated with white; 6.3×3.6×1.2 cm; 20 g, carefully retouched edges, also worn (?); Lot A-169. dd: No. 53-93; fine translucent veined buff chert; 6.1 × 3.2 × 0.9 cm; 16 g; very fine flaking and retouch; one side worn; lowest stratum in Cenote Ch'en Mul; Lot D-50.

Points with tapering stem. ee: No. 55-92; opaque gray chert; 7.6 × 3.0 × 0.85 cm; 15 g; lowest stratum in Cenote Ch'en Mul; Lot D-50. ff: No. 53-102; opaque reddish good-quality chert; 7.0 × 3.0 × 0.8 cm; 12 g; lowest stratum in Cenote Ch'en Mul; Lot D-47. gg: No. 52-10; translucent cream chert or quartz; 6.2 × 3.2 × 1.0 cm; 18 g; Group S-114; Lot A.

Unclassified. hh: No. 54-280; opaque white chert; 5.2 × 3.3 × 1.3 cm; lower edge broken; Lot A-49. ii: No. 52-177; opaque white chert; 7.0 × 3.9 × 1.2 cm; lower edge broken; outside city wall, west of Str. DD-10; Lot A.

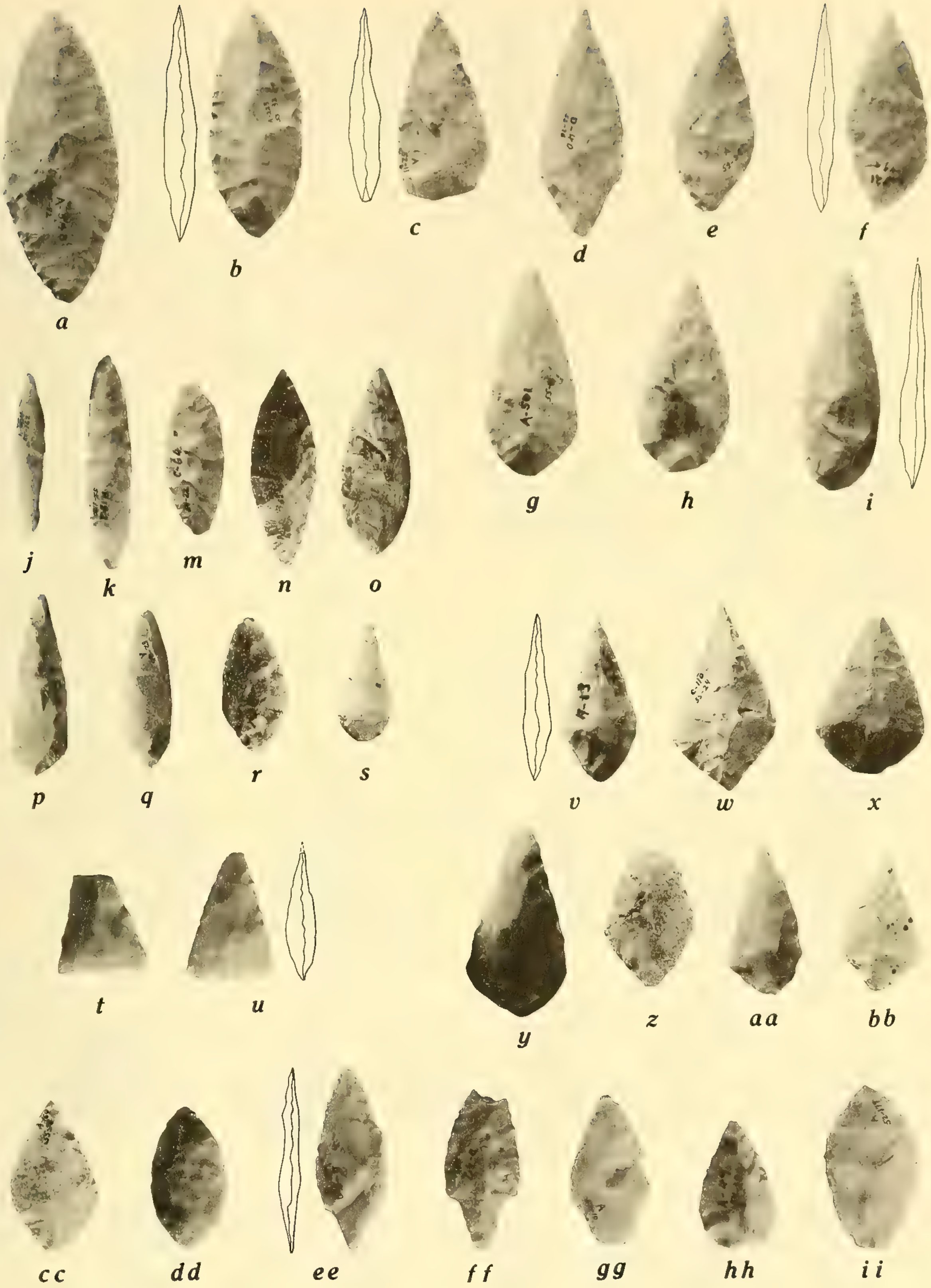
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FIGURE 29

FIGURE 30. Flint arrow points. Mayapan. Scale approx. 2/5.

a: *Arrow points of unspecialized forms*. Max. length, 5.4 cm. Material: semitranslucent to opaque chert, varying from gray and buff to white, sometimes with light patina. First example is of fine opaque buff and gray chert, somewhat different from others in group. First and last four examples flaked only on edges, from both sides. Lots A-501, 546, 546, 546, 223, 530, 503, 505, 114, 578, and A.

b: *Side-notched points with straight base*. Max. length: 6.1 cm. Material: semitranslucent white or buff chert. All made from retouched flakes. Second and last two examples chipped on one face. Lots A, A-221, D-69, A-99, A-575, A-576, A-587.

c: *Side-notched points with rounded base*. Max. length: 5.5 cm. Material: semitranslucent white or buff chert, sometimes patinated. Last two examples of dark gray chert, different in quality from others. All made from thin flakes. First two examples retouched only near point and at base. Third, fifth, and last, flaked on both faces. Others, chipped on edges from both sides. Lots A-406, C-17, 17, A-131, 546, 187, C-59, 107.

d: *Arrow point with tapering stem*, *No. 53-11*. 4.2 × 1.2 × 0.6 cm. Fine translucent buff chert. Point broken. Finely flaked on both sides. Under bench of Str. I-94, near bedrock level. Lot A-31.

e: *Arrow point with straight stem*, *No. 55-146*. 3.35 × 1.45 × 0.5 cm. Made from flake retouched on edges from both sides. Bulb of percussion near point. Translucent milky chert with patina. Lot A-406.

f: *Broken arrow or dart point*, *No. 54-25*. 4.4 × 2.4 × 0.6 cm. Wt. 5 g. Translucent buff chert. Spot of cortex remaining on base. Chipped from both sides. In early stratum of trench north of Str. Q-162. Lot C-64b.

g: *Corner-notched point*, *No. 54-270*. Opaque brown chert. 3.5 × 1.9 × 0.3 cm. Made from thin flake chipped from both sides. Lot C-93.

FIGURE 31. Hatchet-form flints. Mayapan. Scale approx. 2/5.

Length: max. 7.7, min. 3.7, av. 5.34 cm. Width: max. 5.0, min. 2.6, av. 3.83 cm. Thickness: max. 1.7, min. 0.8, av. 1.18 cm. Wt.: max. 47, min. 7, av. 23.3 g. Material: semitranslucent buff, gray, or white chert, in some specimens heavily patinated. *h* and *q* opaque white; *e* deep buff opaque; *g* dark gray. *j* is made from a flake and chipped on one side only, except at the lower edge. Others are chipped from both sides and come to a sharp edge at the bottom. Edges often appear nicked. From surface lots, except *a*, Lot A-239, and *g*, Lot D-89.

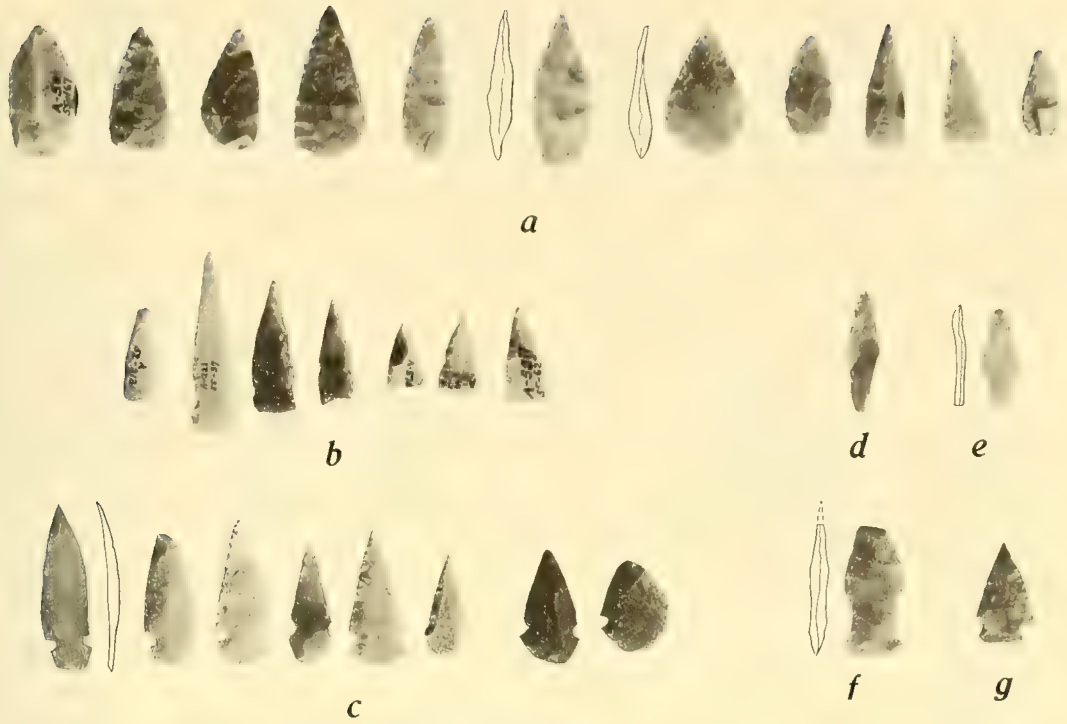

FIGURE 30

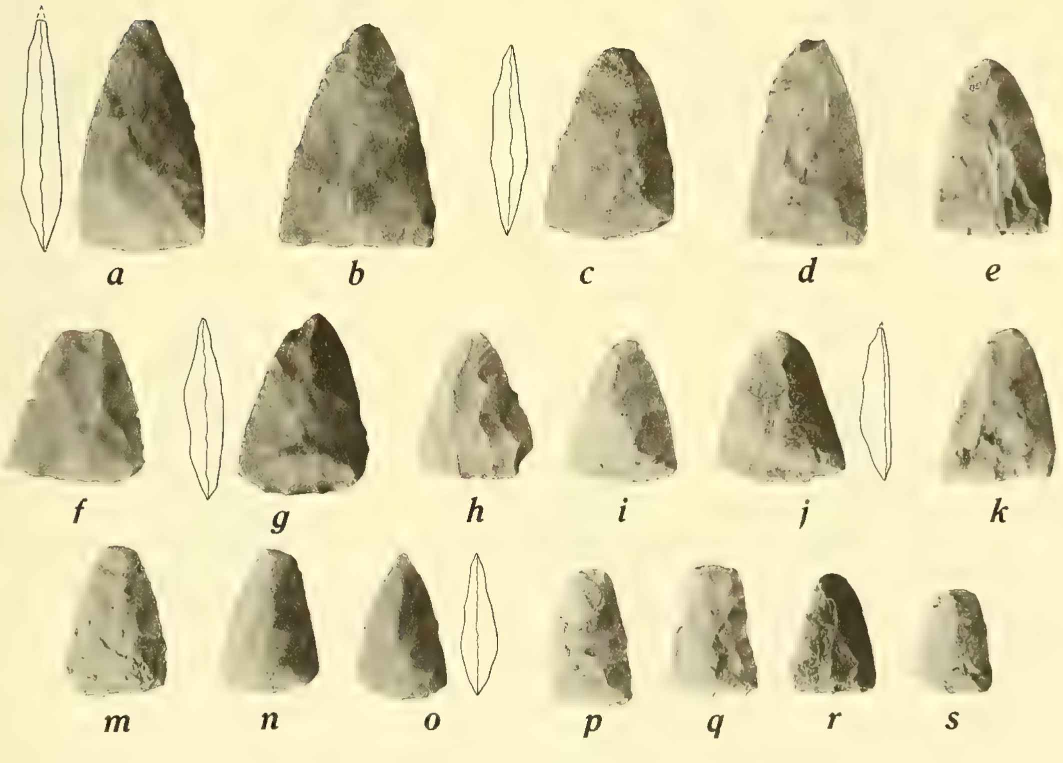
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FIGURE 31

FIGURE 32. Various flint tools. Mayapan. Scale approx. 2/5.

a: No. 52-184. Oval flint implement. 6.3 × 3.7 × 1.7 cm. Wt. 36 g. Heavily patinated chert, with flaws. Roughly chipped on both sides. South of Group Z-4. Lot A.

b: No. 54-224. Oval flint implement. 5.3 × 3.4 × 2.4 cm. Wt. 27 g. Semitranslucent buff chert, flawed. Lot A-111.

c: No. 52-82. Oval flint implement. 5.3 × 3.0 × 0.8 cm. Wt. 17 g. Semitranslucent gray and opaque white chert. Near Group Z-195. Lot A.

d: No. 52-191. Oval flint implement. 5.7 × 3.2 × 1.7 cm. Wt. 24 g. Translucent buff chert. Lot A-9.

e: No. 52-179. Asymmetrical blade. 6.0 × 3.3 × 1.4 cm. Wt. 33 g. Semitranslucent gray chert with red cortex. Probably used on convex edge. Both ends broken. Near Group AA-133. Lot A.

f: No. 52-227. Asymmetrical blade. 7.2 × 3.0 × 1.3 cm. Wt. 33 g. Opaque rose and white chert. Both ends broken. Str. R-162. Lot A.

g: No. 52-215. Asymmetrical point, broken. 5.6 × 3.5 × 1.4 cm. Wt. 25 g. Opaque white chert. Outside city wall, near Group EE-12. Lot A.

h: No. 52-90. Asymmetrical point. 6.4 × 2.7 × 1.25 cm. Wt. 18 g. Opaque white chert. Near Group K-54. Lot A.

i: No. 52-216. Asymmetrical point, tip broken. 5.5 × 2.5 × 1.0 cm. Wt. 13 g. Opaque white chert. No indication of use. Near Str. D-12. Lot A.

j: No. 55-165. Scraper-awl (?). 6.2 × 4.6 × 1.7 cm. Wt. 47 g. Opaque light gray chert. All edges retouched; point, sharply thinned. Lot A-501.

k: No. 55-619. Scraper-awl (?). 5.6 × 2.7 × 1.0 cm. Wt. 9 g. Semitranslucent light gray chert. Made of thin flake, with bulb of percussion at base. Chipped on one side only. Near point, ridges appear smoothed. Lot A-425.

m: No. 55-507. Small drill, with broken tip (?). 6.5 × 1.2 × 0.65 cm. Translucent buff chert. Triangular section. Edges straight and finely chipped, possibly somewhat smoothed by use. Lot A-585.

n: No. 54-276. Small broken drill (?). 6.0×1.5×0.75 cm. Opaque reddish gray chert, with light patina. Diamond-shaped section. Lot A-139.

o: No. 55-151. Fragment of long point (possibly drill). 4.8 × 1.2 × 0.65 cm. Opaque white chert. Finely chipped edges. Lot A-182.

p: No. 52-183. Fragment of drill (?). 4.0×1.0×0.9 cm. Opaque white chert. Triangular section. Chipping apparently smoothed down by wear. Group AA-59. Lot A.

q: No. 53-142. Fragment of narrow blade. 8.2 × 2.7 × 1.2 cm. Opaque gray grainy chert. Well chipped, retouched edges. Lot C-44.

r: No. 55-174. Fragment of narrow blade. 8.0 × 2.1 × 0.8 cm. Opaque white chert. Edges straight and apparently used. Lot A-559.

s: No. 55-130. Fragment of narrow blade. Semitranslucent white chert. 5.9 × 2.1 × 0.7 cm. Edges finely retouched. Lot A-188.

t: No. 55-168. Fragment of thick tapered tool. 5.6 × 3.5 × 2.1 cm. Opaque cream, rose-tinged chert. Triangular section. Lot A-501.

u: No. 52-169. Fragment of thick, tapered tool. 11.0 × 3.0 × 4.2 cm. Opaque light gray, grainy chert. Diamond section. Near Group Z-165. Lot A.

v: No. 53-107. Crudely shaped celt or chopper. 11.4 × 5.5 × 3.0 cm. Opaque white chert. Square Q, west of Main Group. Lot A.

w: No. 52-84. Crudely shaped tool. 9.0 × 3.8 × ? cm. Opaque cream chert with large flaws. Chipped on one side only. Near Str. Z-71. Lot A.

x: No. 52-185. Crudely shaped tool. 7.5 × 3.4 × 2.2 cm. Opaque cream chert. Triangular section. Chipping on one side only. Near Str. AA-4. Lot A.

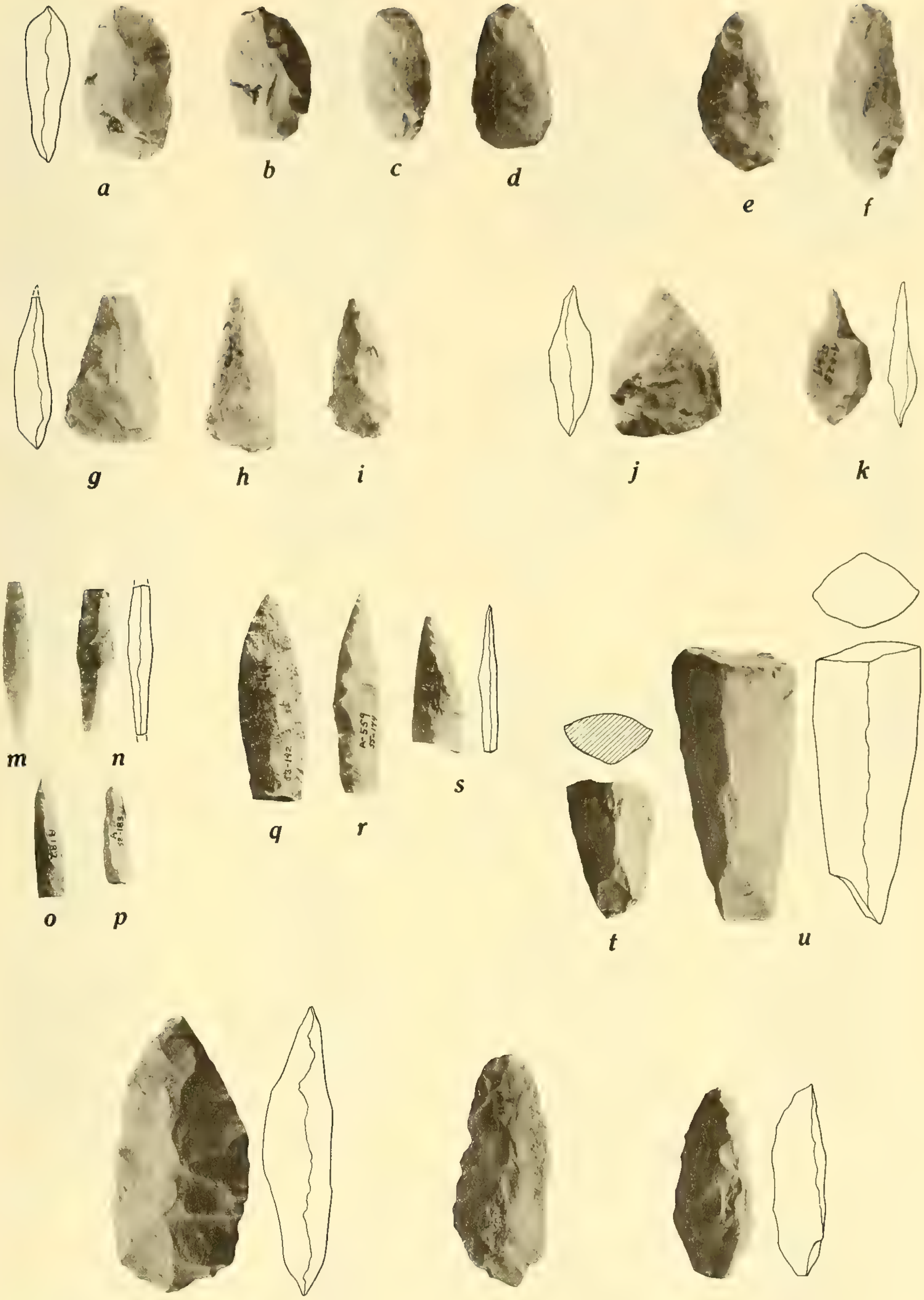
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FIGURE 32

FIGURE 33. Flint core chips, blanks, and rejects. Mayapan. Scale approx. 2/5.

Lots A-238: *a*,*b*,*d*,*e*,*g*,*o*,*p*,*q*.

A-234: *c*.

A-15: *f*,*k*,*r*-*v*.

A: *h*.

C-143: *i*.

A-148: *j*.

A: *k*.

A-9: *m*.

A-536: *n*.

All of gray native chert with white or reddish cortex. Those of Lot A-15 are of opaque gray chert of better quality than the others, and all appear to be from one core.

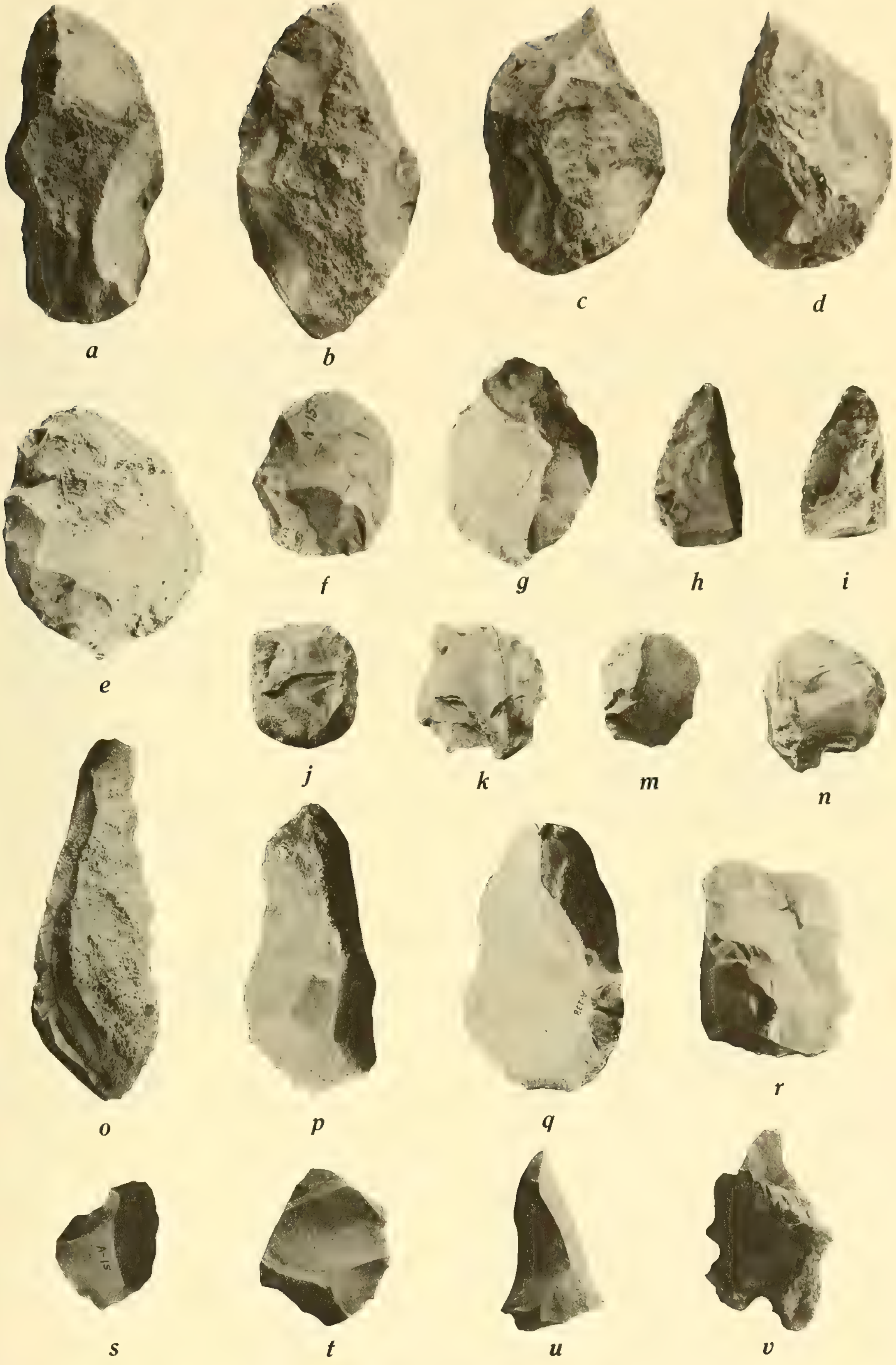
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FIGURE 33

FIGURE 34. Flint chips and flakes. Mayapan. Scale approx. 2/5.

a: No. 56-43. Flint chip used as scraper. Opaque gray veined chert. 5.5 × 5.0 × 1.1 cm. Chip, showing sharp bulb of percussion. Slightly retouched on one edge. Working edge unevenly nicked. Lot A-213.

b: No. 53-63. Flint chip used as scraper. Opaque white and gray chert. 7.0 × 5.5 × 1.7 cm. Unretouched. Edges show signs of wear. Lot C-12.

c: Small flake scrapers. Semitranslucent milky chert, sometimes with white cortex remaining. Av. size: 3.3 × 2.7 × 0.4 cm. Unretouched flakes, with one or two sharp edges, some with signs of wear. Various locations, sealed and surface.

d: No. 55-177. Milky white chert with fine-grained gray cortex. 4.8 × 2.1 × 0.8 cm. Surfaces and edge smoothed. Lot A-559.

e: Small triangular scrapers. Largest 4.2 × 3.0 × 0.3 cm. Edges show wear and possibly slight retouch. Various locations.

f: No. 56-5. Fragment of retouched flake. Opaque yellow-brown flint of fine quality. 6.6 × 4.3 × 0.7 cm. Slight retouch on edges. Lot A-251.

g: No. 52-225. White chert flake, with spot of cortex. 5.7 × 2.5 × 1.4 cm. Retouched on edges from under side. From surface collection.

h: Various retouched flakes. Left, second row has carefully rounded edge, probably flake scraper. Oval forms in first row may be fortuitous, retouch uncertain.

i: Unretouched flakes, probably used. From various locations.

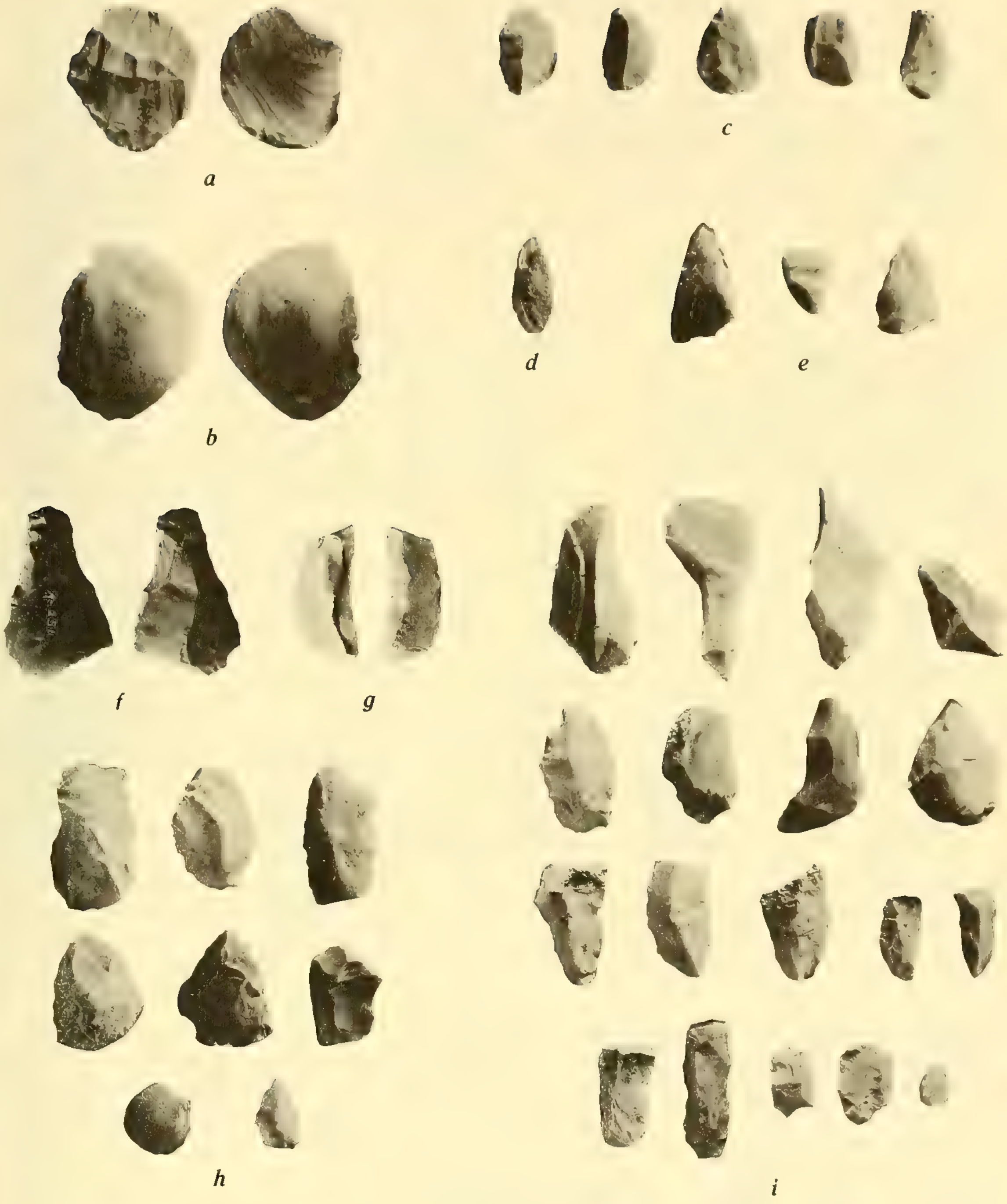

FIGURE 34

FIGURE 35. Artifacts of obsidian. Mayapan. Scale approx. 1/2.

a: No. 53-151. Large chipped blade, in five fragments. Translucent streaked gray obsidian. 29 × 4.4 × 0.85 cm. Both tips missing. Very shallow flaking on both sides with fine retouch on edges. Part of cache, Lot C-49.

b: Arrow points of unspecialized form. No. 55-616: 3.4 × 1.5 × 0.4 cm; chipped on both sides; Lot A-424. No. 54-254: 3.3 × 1.0 × 0.3 cm; chipped on one side; Lot C-94.

c: Side-notched arrow points. Length 2.0 to 4.4, av. 3.2 cm; width 1.0 to 1.6, av. 1.24 cm; thickness 0.25 to 0.35, av. 0.29 cm. All made from flake blades of clear or lightly streaked gray obsidian. First example shows bulb of percussion at base and is chipped from one side; others show retouch from both sides. All from structures near Main Group. Lots A-95, A-131, A-501, C-79, A-95, C-94.

d: No. 55-59. Arrow point. Heavily streaked gray obsidian. 2.5 × 2.2 × 0.5 cm. Chipped on both sides. Lot A-502.

e: Two arrow points with notched base. Streaked gray obsidian. Lengths 2.8, 3.0 cm; widths 1.1, 1.3 cm; thickness 0.3 cm. Edges chipped from both sides. One from child burial, Lot A-265; the other, Lot C-3.

f: Two arrow points with notched unretouched base. One of clear gray obsidian, other of gray obsidian with warm buff tinge. Lengths 2.5, 3.0 cm; widths 1.5, 1.8 cm; thicknesses 0.2, 0.4 cm. Lots C-81, A-503.

g: No. 54-160. 3.5 × 1.3 × 0.3 cm. Clear gray obsidian. Chipped from both sides. Lot A-115.

h: No. 56-204. Gray streaked obsidian with flat area of cortex on one side. 5.3 × 3.1 × 0.2 cm. Both surfaces flat with faint concentric rings. Edges chipped from both sides up to break, beyond which piece is unworked. Lot A-576.

i: Obsidian flake blades with unretouched ends. Longest 11.3 cm. All have portion of dull striking platform at butt end. Various locations.

j: Obsidian flake blades with trimmed ends. Longest 8.4 cm. All with cortical or artificially roughened striking platform at butt end. Portion of cortex remaining on ridged surface of one specimen. Various locations.

k: Lancet blades. Clear gray and streaked obsidian. Longest 9.1 × 0.8 × 0.3 cm. Rough striking platform at butt end. Sharp points. Edges apparently unused.

m: No. 56-101. Two large flakes of clear gray obsidian. 7.3 × 2.5 × 0.4 cm and 6.0 × 3.1 × 0.6 cm. Neither flake has flat striking platform. Edges show signs of use. Lot A-444.

n: Obsidian flake blades retouched to points. Smaller specimens complete, have rough striking platform. 4.1 × 0.9 × 0.3 cm; 3.6 × 0.45 × 0.1 cm. Edges chipped from both sides near point.

o: Scrapers (?) shaped from obsidian flake blades. Last specimen 2.8 × 1.1 × 0.3 cm. Long edges chipped from one side, resulting in oval forms. From various locations.

p: Flake-blade fragments chipped (from one side) on one or both transverse breaks to form small scrapers. First specimen 1.5 × 1.6 × 0.3 cm. Lots A-130, 238 (one general location).

q: Butt ends of obsidian blades, chipped on one side to form small scrapers. Max. dimension 1.8 cm, thickness about 0.4 cm. From various locations.

r: Scrapers made from core chips. Upper row, large amorphous scrapers: 3.0 to 4.1 cm in max. dimension, 0.8 to 1.3 cm thick. Two lower rows, "thumbnail" scrapers: max. dimension 1.9 to 3.0, av. 2.3 cm; thickness 0.4 to 1.0, av. 0.67 cm. Chipping only on one side; flat or with bulb of percussion on the other. One from near Gate D; others from various locations near Main Group.

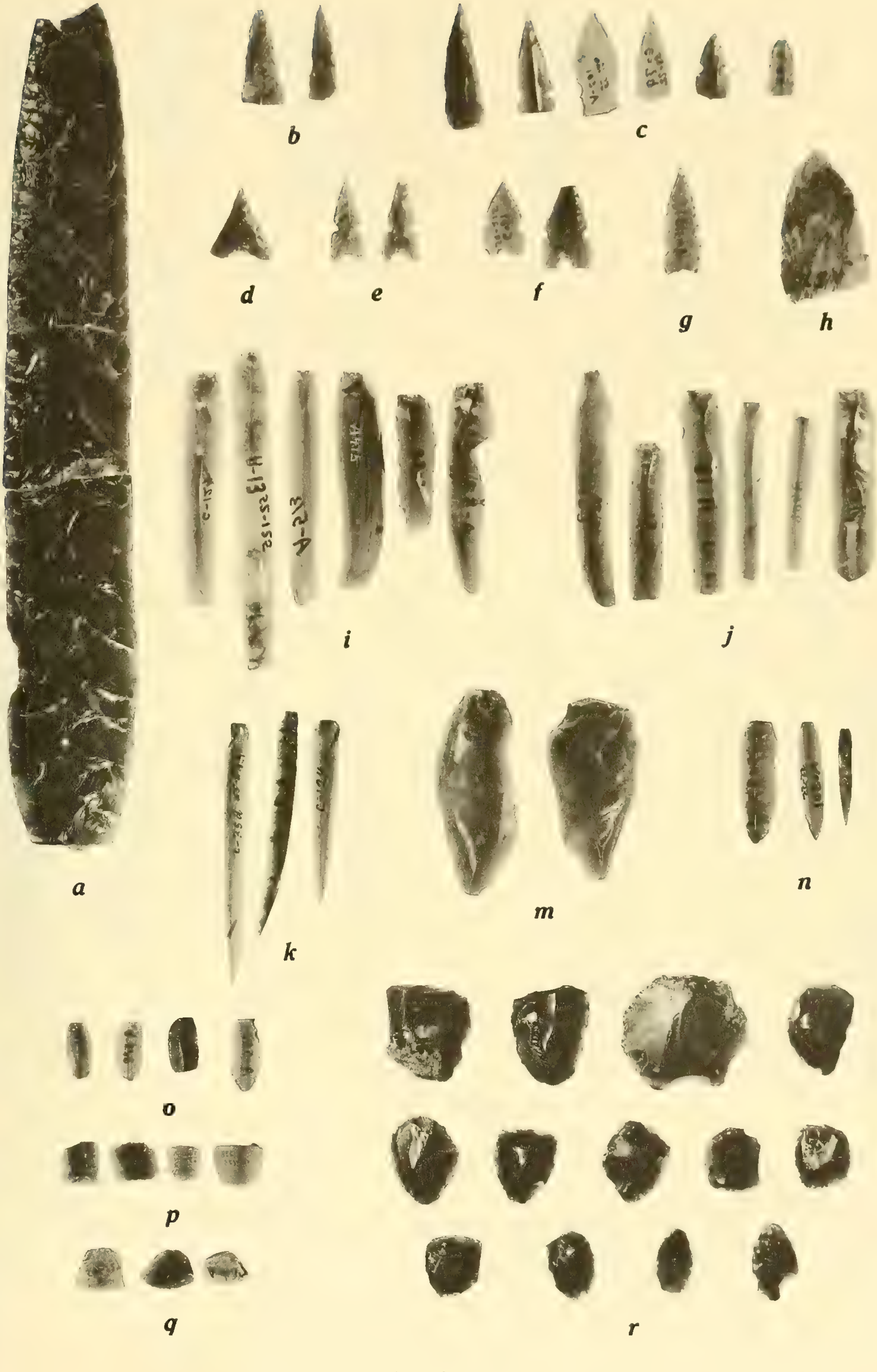
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FIGURE 35

FIGURE 36. Obsidian cores and rejects. Mayapan. Scale approx. 2/5.

a: Thick chips and fragments of cores. Largest 7.6 cm.
b: Exhausted cores. Largest 9.25 cm long.
c: Broken core tips.
d: Two pointed obsidian flakes. Lot A-191.
e: Thin amorphous flakes.
f: Flake with portions of two striking platforms.
g: Flake blades of irregular form.

FIGURE 37. Bone tools. Mayapan. Scale approx. 3/5.

a: No. 54-165. Awl. 9.9 cm long. Made from distal end of metapodial bone of deer. Lot A-118.
b: No. 52-106. Awl. 12.3 cm long. Made of split distal end of metapodial bone of deer. Lot A-13.
c: No. 55-60. Awl. 12.4 cm long. Made of split distal end of metapodial bone of deer. Lot A-522.
d: No. 55-491. Awl. 9.4 cm long. Probably made from proximal end of metapodial bone of deer. Lot A-451.
e: No. 55-512. Awl. 8 cm long. Lot A-587.
f: No. 52-107. Awl. 6.6 cm long. Lot A-13.
g: No. 53-130. Point, probably awl. 6.7 cm long. Made from strip of long bone. Lot C-34.
h: No. 56-226. Point. Broken length: 6.5 cm. Made from strip of long bone of unidentified artiodactyl. Lot C-54.
i: No. 56-228. Point. Length to break, 6 cm. Made from strip of long bone, probably artiodactyl. Lot C-56.
j: No. 53-128. Point. 12.8 cm to break. Made of strip of unidentified long bone. Lot C-25.
k: Fragments of needles with slit eyes. Longest, 11.5 cm. First 4 from burial cist, Lot C-22. Others, Lots A-13 and A-421.
m: No. 52-108. Bodkin. 7.8 cm long. Lot A-13.
n: No. 55-504. Needle with drilled eye. 9.9 cm long. Lot A-451.
No. 56-15. Point. 7.9 cm long. With child burial, Lot A-265.

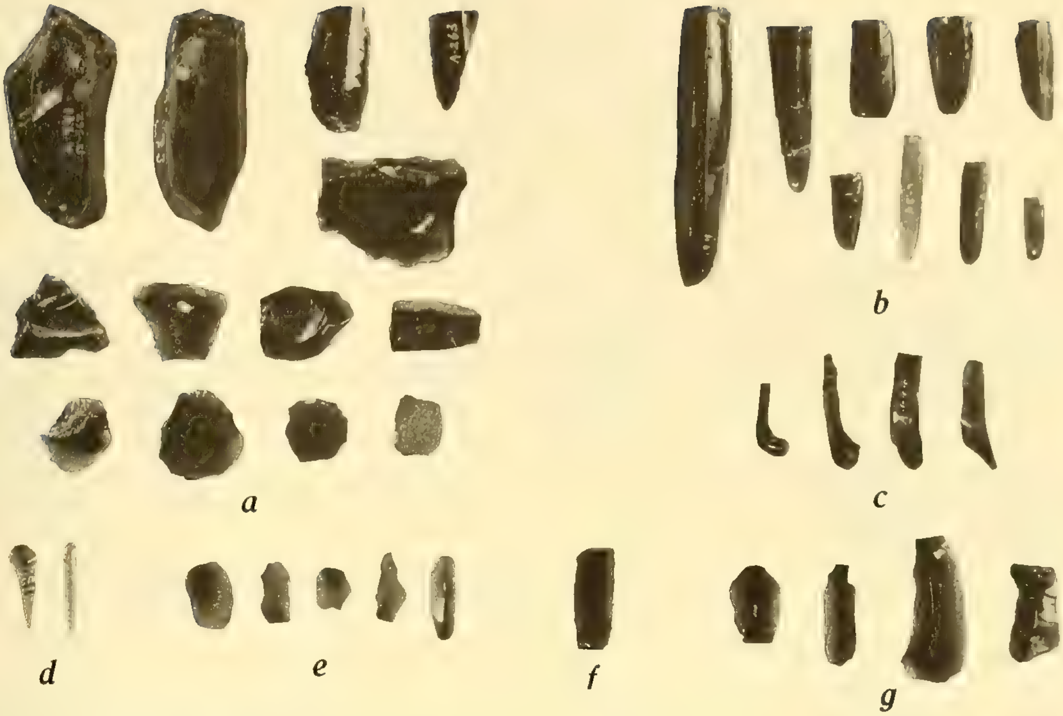
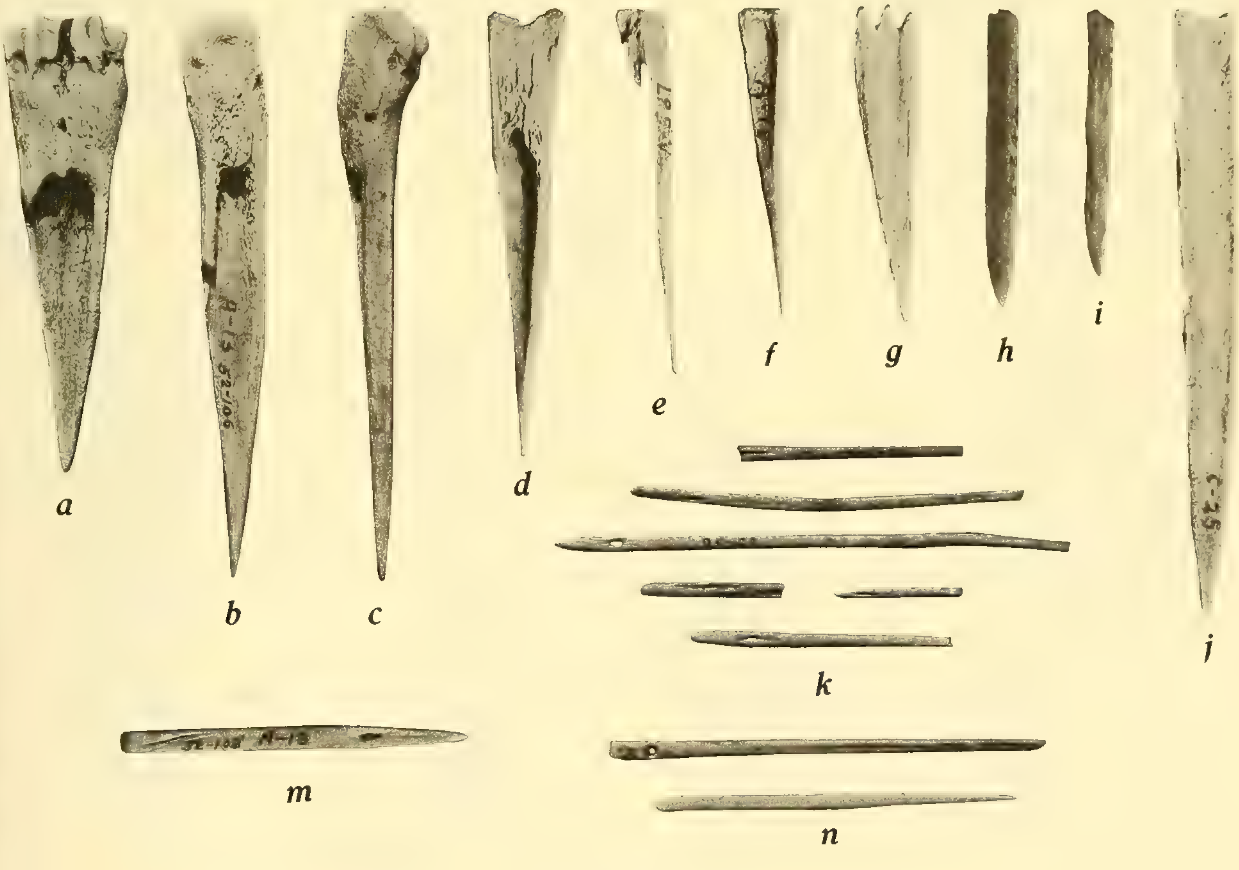


FIGURE 36


a
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A-13 52-106
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j
C-25
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m
52-108 A-13
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FIGURE 37

FIGURE 38. Bone objects. Mayapan. Scale approx. 3/5.

a: Spindle whorls, truncated conical form. No. 55-46: diam. 2.4, 1.5 cm; ht. 1.3 cm. From tomb, Lot A-505. No. 53-171: diam. 2.8, 2.0 cm; ht. 1.1 cm. With child burial, Lot A-54. Both whorls have hard, smooth parallel surfaces, the sides being cut through spongy part of bone.

b: No. 55-531. Pair of earplug flares (?). Diam. 3.8 cm max., 3.3 cm min.; ht. 1.4, 1.5 cm. Faint concentric striations on face. Irregular band of rough surface both on interior and exterior of stems 5 mm below opening of flare. From tomb, Lot A-594.

c: No. 55-65. Finger ring (?). Outer diam. 2.0 cm; ht. 0.95 cm; thickness about 0.5 mm. Outer bands incised with oblique lines; inner band slightly recessed rough surface, possibly originally inlaid. Lot A-524.

d: No. 53-158. Fragment of ring. Section 3.5 × 3.5 mm. From sascab pit, Square R.

e: No. 53-82. Unidentified object. 4.2 × 2.2 × 1.0 cm. Section rectangular. Lot D-36.

f: No. 55-505. Unidentified object. 4.2 × 1.4 × 1.4 cm. Triangular section with lightly curved sides. Lot A-585.

g: No. 53-15. Shaped piece of long bone. 3.7 × 1.75 × 0.9 cm. Bone about 3 mm thick, curved in section. Point appears cut but may be broken. Possibly object was originally an awl. Lot A-29.

h: No. 55-100. Ungual phalanx of deer. One of pair found on floor of kitchen. Lot A-223.

i: No. 56-94. Unidentified object of bone or turtle plastron. 3.0 × 2.5 × 0.7 cm max. Lot A-430.

j: No. 53-72. Five tubular beads, probably of bird bone. Longest 1.4 cm. Lot C-29.

k,m,n: Segments cut from long bones. No. 53-81: 4.7 cm long, diam. 1.7 to 2.0 cm; cut at both ends with V-shaped cut, leaving break at interior edge; Lot D-36. No. 52-195: segment shaped to rectangular form and polished; 2.0 × 1.7 × 1.4 cm; crosscuts almost perpendicular to axis, ending in broken edge; Lot D-11. No. 55-91: 1.7 × 1.7 × 1.4 cm; cut edges appear worn; Lot A-546.

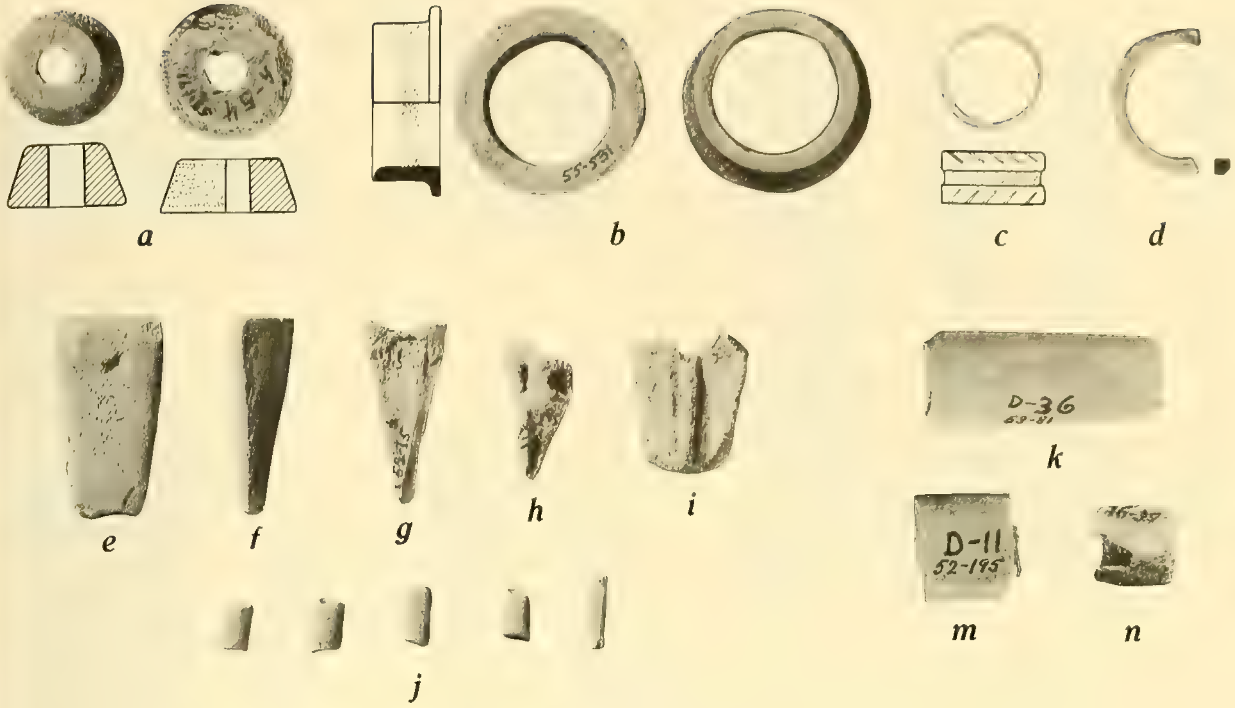
FIGURE 39. Carved bone and antler. Mayapan. Scale approx. 4/5.

a: No. 55-71. Fragment of thin tubular bone, about 2 mm thick. Gouged and incised with banded design. Original diameter about 2.5 cm. Surface well polished. Lot A-522.

b: No. 53-24. Carved animal femur representing jaguar. Max. length 11.95 cm. Opening in left side apparently cut. End broken. Lot D-30.

c: No. 54-164. Strip of thin curved bone with simple incised design. 6 cm long. Lot A-115.

d: No. 55-260. Carved antler. Max. dimensions 14.7 × 4.2 × 1.6 cm. From burial, Lot A-585.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53-81
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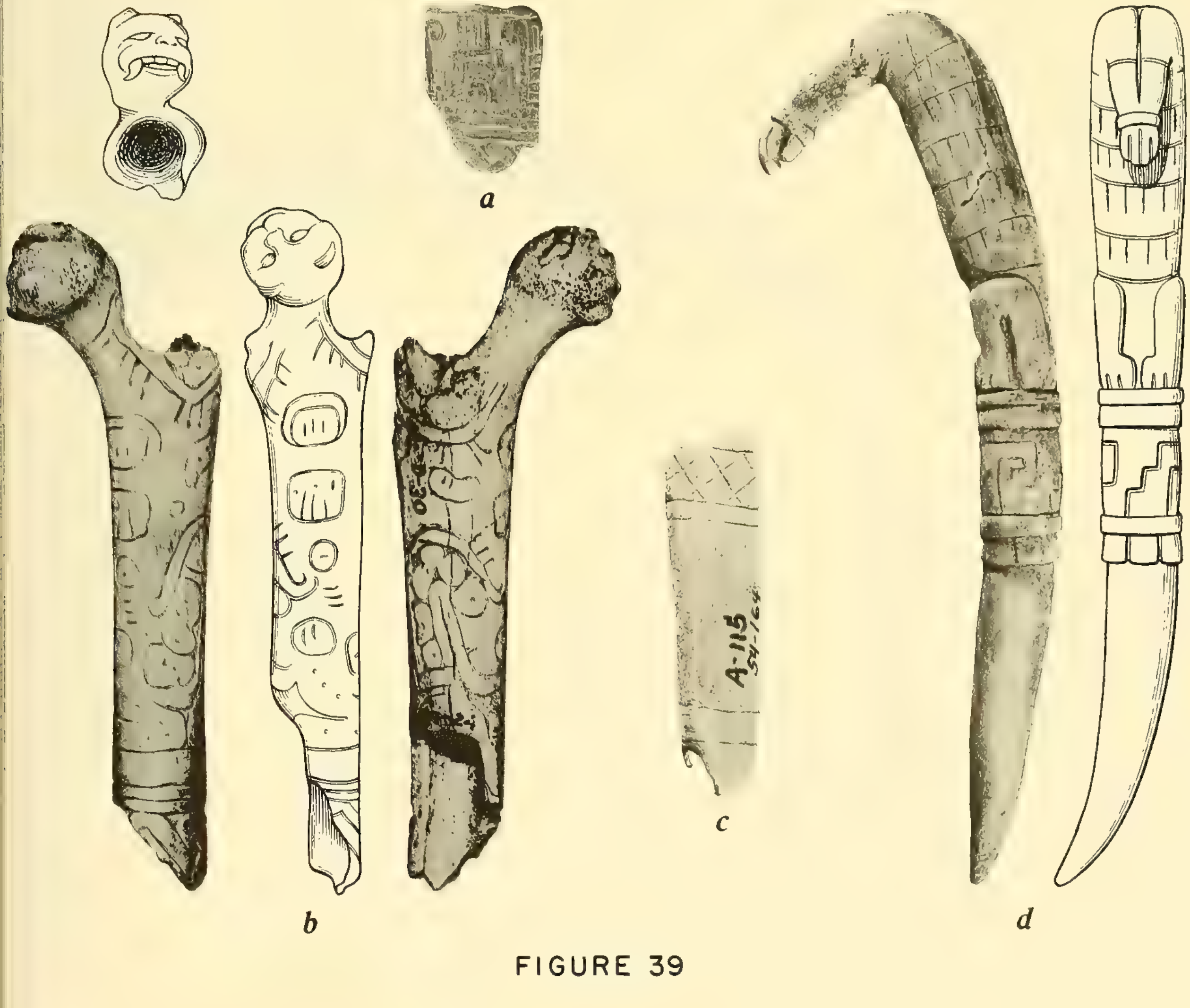
FIGURE 38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54-164
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FIGURE 39

FIGURE 40. Worked bone and antler. Mayapan. Scale approx. 2/5.

a,*b*: *Nos. 53-119*, *53-138*. Proximal and distal ends of human femora cut from shaft. Crosscuts are V-shaped and broken off at inner edge. Lots D-70, D-61.

c,*d*: Cut shafts of human femora, *Nos. 53-136*, Lot C-13, and *53-94*, Lot D-50. One end crosscut, the other sliced from oblique crosscut. End of complete specimen appears worn.

e: *No. 55-359*. Thin tubular bone (possibly long bone of monkey). One end with longitudinal opening. Lot A-441.

f,*g*: Cut bird bones. *No. 55-200*: fragment with longitudinal cut; Lot A-413. *No. 55-511*: bird bone with grooved cut at narrow end; Lot A-587.

h,*j*: Perforated long bones. *No. 55-18*: with 4 conical drilled perforations about 5 mm in diameter near one end; Lot C-109. *No. 56-7*: with 3 conical drilled perforations; Lot A-169. *No. 53-9*: fragment; 3 conical perforations very close to cut edge, 1 broken through; Lot A-31.

k,*m*: Bone rasps. *No. 54-87*: fragment of human femur with V-shaped cuts about 2 cm long and 9.5 mm apart; Lot A-99. *No. 53-231*: fragment with cuts about 3.5 mm on center; Lot C-35.

n: *No. 56-219*. Posterior tip of right ischium of deer, with longitudinal cut. Lot D-28.

o: *No. 55-135*. Rib of manati. End fashioned into a knob. Surface blackened by fire. Lot A-543.

p: *No. 56-224*. Right tibia of deer, grooved on opposite sides and with section cut away. Lot A-13.

q: *No. 53-31*. Unidentified bone with chisel-like end. Lot D-28.

r,*s*,*t*: Antler points. *No. 56-91*, Lot A-443; *No. 55-527*, Lot A-586; *No. 54-112*, Lot A-110. Burr is not removed, but points appear to have been smoothed, though not highly sharpened.

u: *No. 55-188*. Fragment of deer antler worked to spatulate end. Lot A-562.

v-*x*: *No. 52-110*. Segments of deer antler. Burr trimmed, and shafts of first two are hollow, having a bore about 2 cm deep in narrower end. Lot A-13.

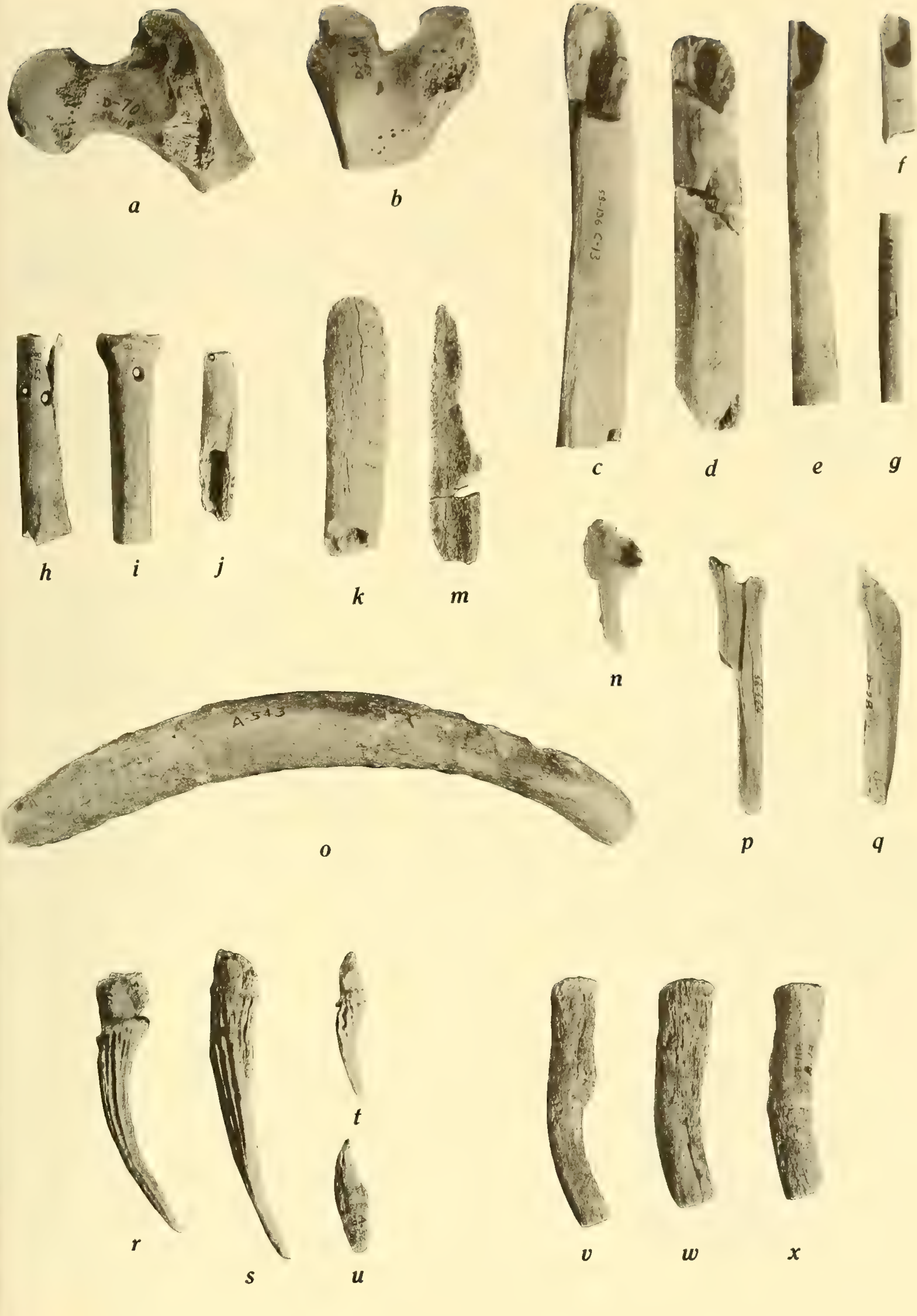
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FIGURE 40

FIGURE 41. Teeth, fish bones, and turtle carapace. Mayapan.
s not to scale; others approx. 3/5.

a: Perforated human teeth. First three rows: *No. 52-121*, 30 perforated human teeth found in midden, Lot A-13. Last row: *No. 55-75*, four perforated teeth found between floors, Lot A-169; *No. 53-77*, Lot C-23; *No. 54-36*, Lot C-62; *No. 55-147*, Lot A-187.

b: *No. 55-490*. Peccary tooth, broken, perforated through root. Lot A-444.

c: *No. 52-21*. Peccary tooth with cylindrical drilled hole in root. Str. R-9. Lot A.

d: *No. 55-495*. Jaguar tooth with biconical perforation in root. Lot A-414.

e: *No. 53-146*. Jaguar tooth with biconically drilled hole. Lot D-69.

f: *No. 54-111*. Jaguar or puma (?) tooth with two slit perforations (broken) in root. Lot A-110.

g: *No. 55-201*. Animal tooth (*Puma*, *Felis concolor*?) with biconically drilled hole through root. Lot A-415.

h: *No. 53-10*. Dog tooth with cylindrical perforation in root. Lot A-31.

i: *No. 53-90*. Tapir tooth with drilled hole in root. Lot C-30.

j: Fish barbules. First two, Lot C-126. Last, barbed, Lot A-576.

k,*m*: Shark teeth. Larger tooth is that of tiger or leopard shark (*Galeocerdo cuvier*). Lots C-90, A-95.

n: Sting ray spines. *No. 55-506*: two sting ray spines with broken points, 16.2 and 14.4 cm long; spines are trimmed at butt end, otherwise unworked; found with burial, Lot A-585. *No. 53-118*: Lot C-32 (fragment at upper right). *No. 55-266*: Lot A-576 (two fragments at lower right).

o: *No. 53-227*. Fragment of bodkin (?). 4.3 × 1.0 × 0.2 cm. Apparently made from sting ray spine with barbs trimmed off. Stained brown. Lot C-56.

p: *No. 55-64*. Strip perforated with cylindrical holes. 5.7 × 0.7 × 0.3 cm. Lot A-501.

q: *No. 55-268*. Fragment of strip with biconical perforation, probably made from sting ray spine. 7.8 × 0.8 × 0.3 cm. Lot A-576.

r: *No. 55-388*. Fragment of sting ray spine with barbs and grooves removed (?). From cache, Lot C-93a.

s: *No. 55-278*. Perforated turtle shell (*Terrapene mexicana*). 15.1 × 10.5 × 6.7 cm. Two conical drilled holes. Lot A-587.

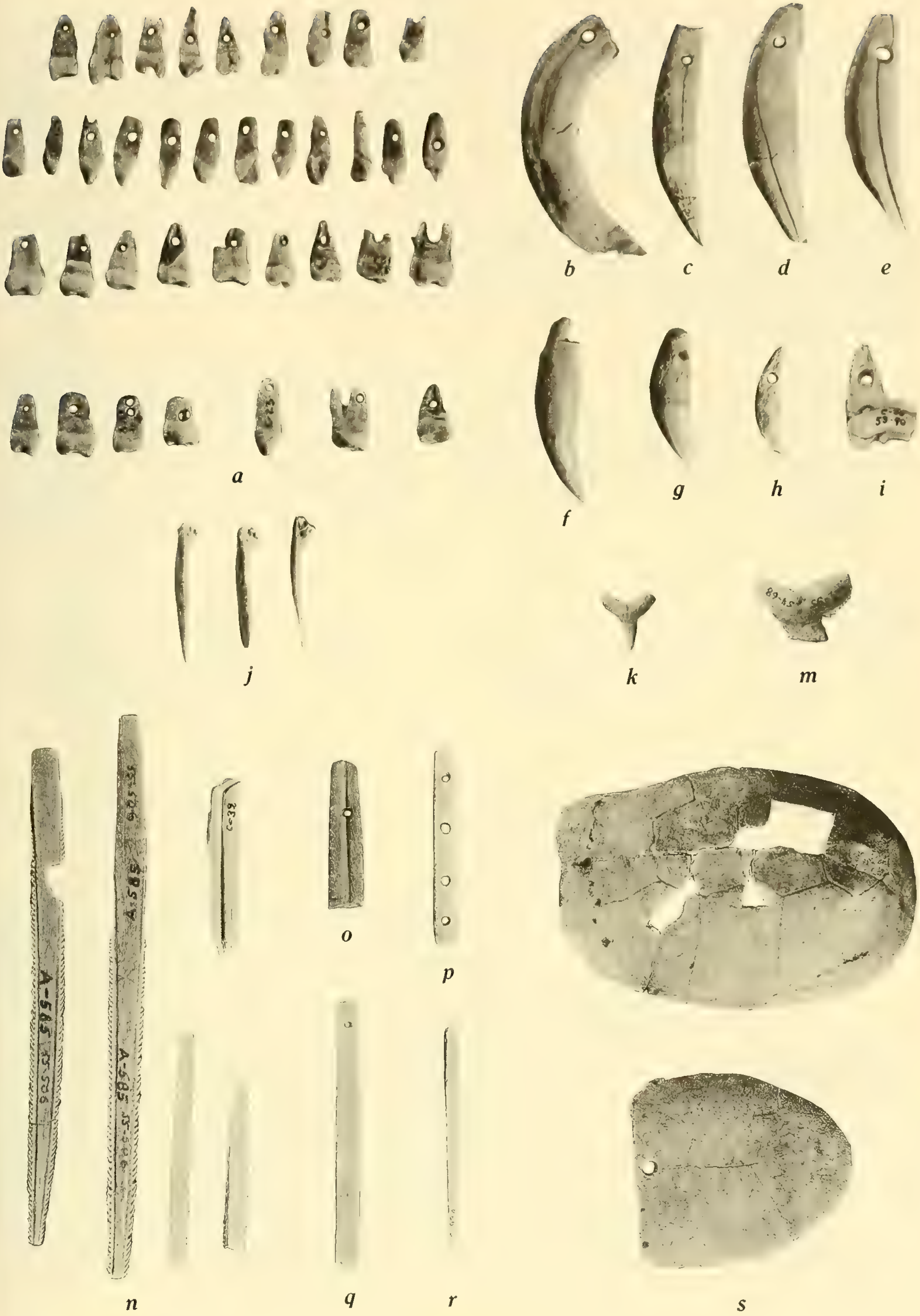
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FIGURE 41

FIGURE 42. Objects of shell. Mayapan. Scale approx. 3/4.

a: No. 56-14. Cut and incised serpent head of shell (?). 2.7 × 2.0 × 0.05 cm. Under side plain. From child burial, Lot A-265 (CR 33, fig. 2,h).

b: Discoidal beads. 1.3 cm max. diam. Lower row, cup-shaped. Various locations.

c: Tubular and ''barrel-shaped'' beads. Longest 2.2 cm. Various locations. Second and third examples burned on surface; fourth has small transverse hole near wider end.

d: Beads pierced through back. No. 55-318: large, irregular-shaped flat bead with two perforations on back; orange and white, probably Spondylus; 3.0 × 1.3 × 0.7 cm; Lot A-509. No. 53-55: two rectangular white beads with perforations from ends to back; 1.7 × 1.3 cm; Lot C-22.

e: Unusual beads. No. 53-14: white; shaped like section of torus, with cylindrical perforation 0.5 cm diam.; Lot A-30. No. 54-106: pink shell with conical transverse perforation; Lot C-76. No. 54-205: dark red shell (or calcareous stone?); 2 cylindrical perforations at right angles through center; 1 × 1 × 0.6 cm; Lot C-81. No. 55-542: bead with biconical perforation near one edge; Lot A-595.

f: No. 55-226. Pendant. 1.35 × 0.8 × 0.3 cm. Surface burned. Two biconical perforations from edges to back. Lot C-122.

g: Nose plugs or pegs; white. No. 53-154, Lot C-49; No. 55-32, Lot A-223. Lengths: 5.3, 3.5 cm; round shaft, rectangular head.

h: No. 54-173. Assemblage of 16 beads and 6 pendants. Four pendants triangular, carved; two, thin slivers of shell. Lot A-125.

i-k: Ornaments with drilled grooves. i: No. 55-7, white; diam. 3.5 cm; thickness 0.45 cm; 2 conical perforations from back; Lot A-207. j: No. 52-101, white, broken edge; Lot A-13. k: No. 52-67, orange, probably Spondylus; 2 conical perforations; Lot A-2.

m-p: Perforated shell objects. m: No. 55-163, 3.1 × 3.0 × 0.4 cm; white (conch?); biconical drilled holes; from masonry of Str. Q-126. n: No. 55-92, white; cylindrical perforations; Lot A-500. o: No. 55-80, white; conical perforations; Lot A-233. p: No. 54-241, thin nacreous; Lot C-87.

q: Triangular pendants. No. 55-172: 3.4 × 2.6 × 0.8 cm; white with traces of orange (paint?) on surface; cylindrical perforation at apex parallel to surface; Lot A-571. No. 52-66: orange; worn surface; cylindrical perforation; Lot A-2. No. 53-69: white, lustrous; biconical perforation at apex; Lot C-29. No. 54-103: blackened surface; carved with grooves and drilled pit; cylindrical perforation at apex; Lot C-68. No. 53-141: white; tapering thickness; unperforated; Lot C-44. No. 55-493: broken orange ornament; thickness at bottom 1.15 cm; broken round hole in apex; Lot A-441.

r: Discs and rings. No. 54-230: diam. 3 cm; Lot C-90. No. 55-538: Lot A-577. No. 55-515: Lot A-583. No. 55-160: from Str. Q-126. No. 56-19: Lot A-252. No. 55-158: Lot A-191. No. 55-53 (2 specimens): Lot A-512. No. 55-156: Lot A-191. All white. First specimen flat, all others concavoconvex. One disc, with drilled hole on concave side, is unperforated. Last specimen has burned surface.

s,t,w,x: Fragments, probably of so-called ''horse-collar'' ornaments. All of heavy white shell (conch?). s: No. 53-213, with scratched glyph band; from surface debris, near Str. Q-88a. t: No. 53-221, one side cut, one broken; four biconical drilled holes; Lot C-50. w: No. 55-509, Lot A-585. x: No. 53-210, Lot C-32.

u,v: Fragments of narrow rings (?). u: No. 53-206, Lot C-31. v: No. 52-103, Lot A-13. Both of heavy white shell.

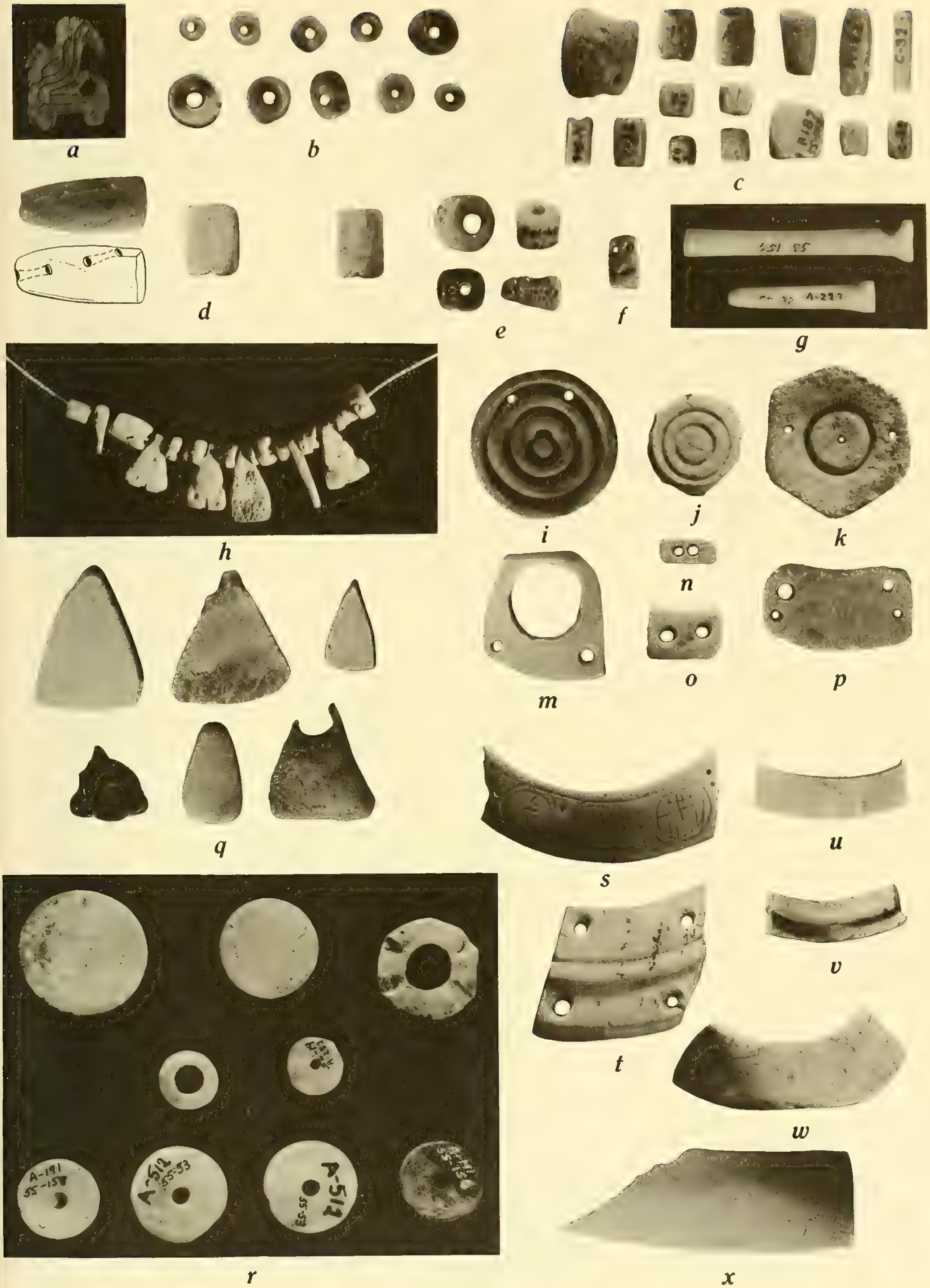
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FIGURE 42

FIGURE 43. Objects of Shell. Mayapan. Scale approx. 3/5.

a: Large discs. No. 55-351: fragment of disc (conch?) with incised design on concave surface; original diameter about 7.6 cm; Lot A-436. No. 55-530: disc with two biconical perforations, diam. 6.2 to 6.5 cm; thickness 0.55 max.; strongly concavoconvex; Lot A-587. No. 55-203: cut fragment with curved edge (probably conch); Lot A-403. No. 55-164: cut fragment with two perforations; Lot A-501. No. 56-97: irregularly shaped piece of conch; Lot A-251.

b: No. 55-198. Nine shaped pieces of conch, probably for inlay. Largest 3.5 cm long. Lots A-187 through A-190.

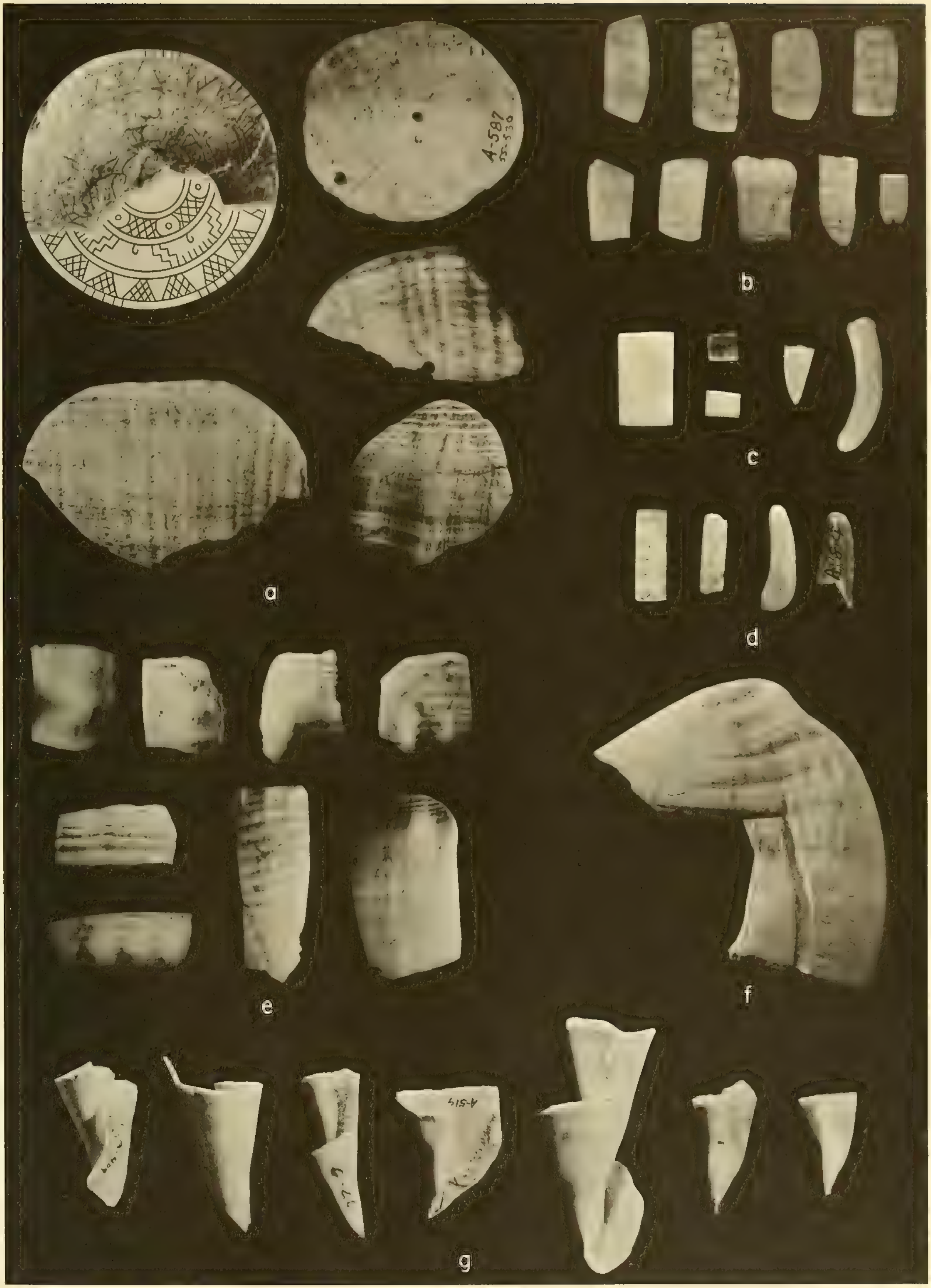
c: No. 54-34, 35. Five shaped pieces. Both pointed pieces broken. Large rectangle 2.7 × 1.6 × 0.1 cm. Shiny concave surface of shell shows on one side. Rectangular pieces possibly of Spondylus. One small rectangle pink; others, white. Lot C-65.

d: Odd pieces, probably for inlay. Rectangle, 2.65 × 0.95 × 0.3 cm. Lots A-413, A-587, A-536, A-84.

e: Pieces cut from shoulder of conch. Various locations.

f: Fragment of conch, showing cuts and scraped surface. Lot C-35.

g: Tips of conch, showing manner of cutting. Various locations.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A-514
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FIGURE 43

FIGURE 44. Pierced shell and coral. Mayapan. *k* not to scale; others approx. 3/5.

a: Cut and pierced *Spondylus* shell. Largest: 6.1 cm. Lots A-1, C-29, C-30, C-59, C-29, C-32, C-29, A-444, C-29, A-58, A-13, A-265, A-403.
b: *Anomia*. Lots A-13 and C-23.
c: *Marginella labiata* Valenciennes, pierced. Various locations.
d: *Marginella apicina* Menke, pierced. Various locations.
e: *Natica canrena* Say, pierced. Various locations.
f,*g*: *Nerita fulgurans*, one specimen pierced.
h: *Psoronaias semigranosus* v. d. Bush. Pierced. Lot A-508.
i: *Chione cancellata* Linné. Perforations are natural.
j: *Macrocallista maculata* Linné.
k: Fragments of coral. Lots A-539, A-180, A-13.

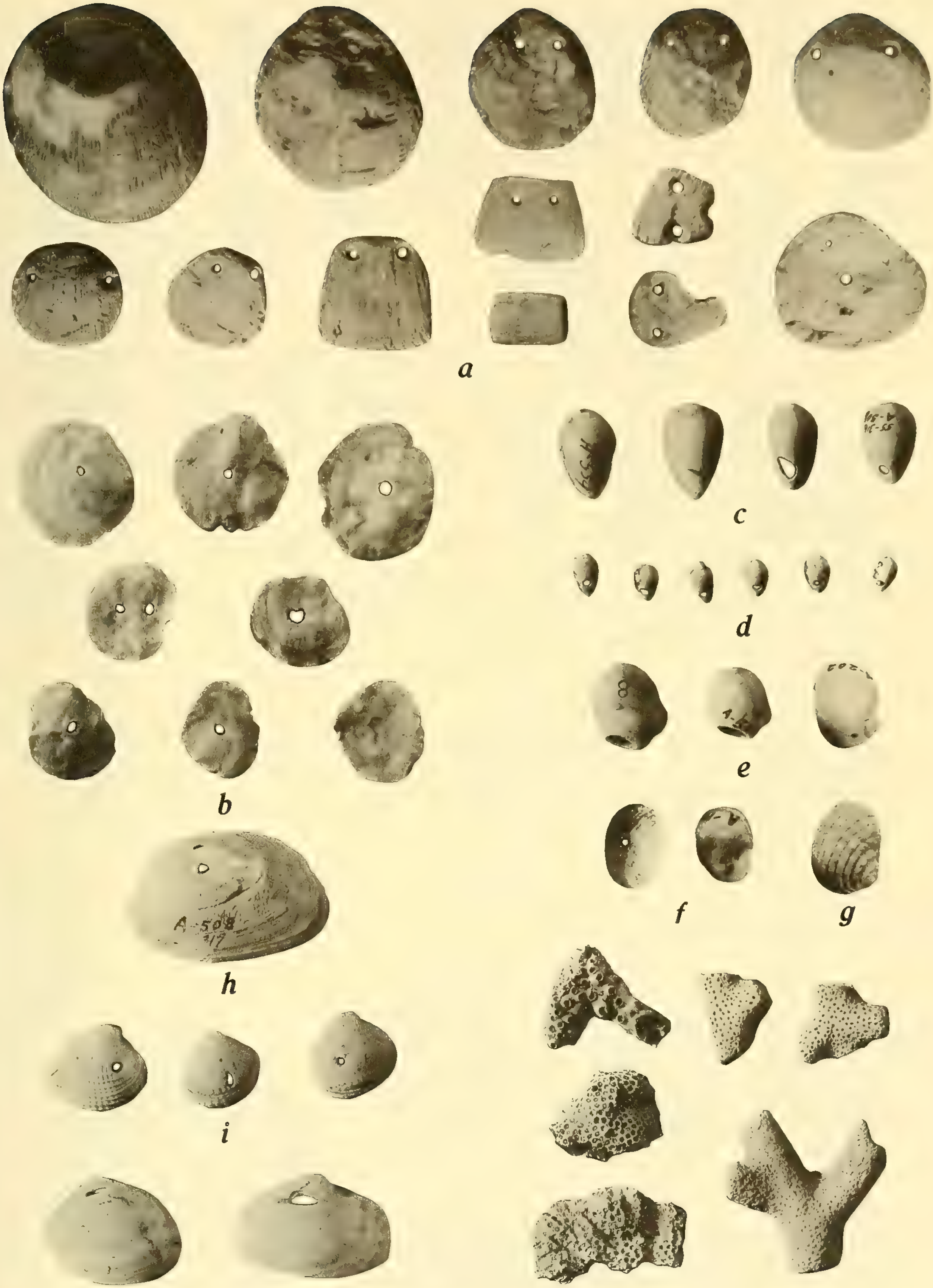
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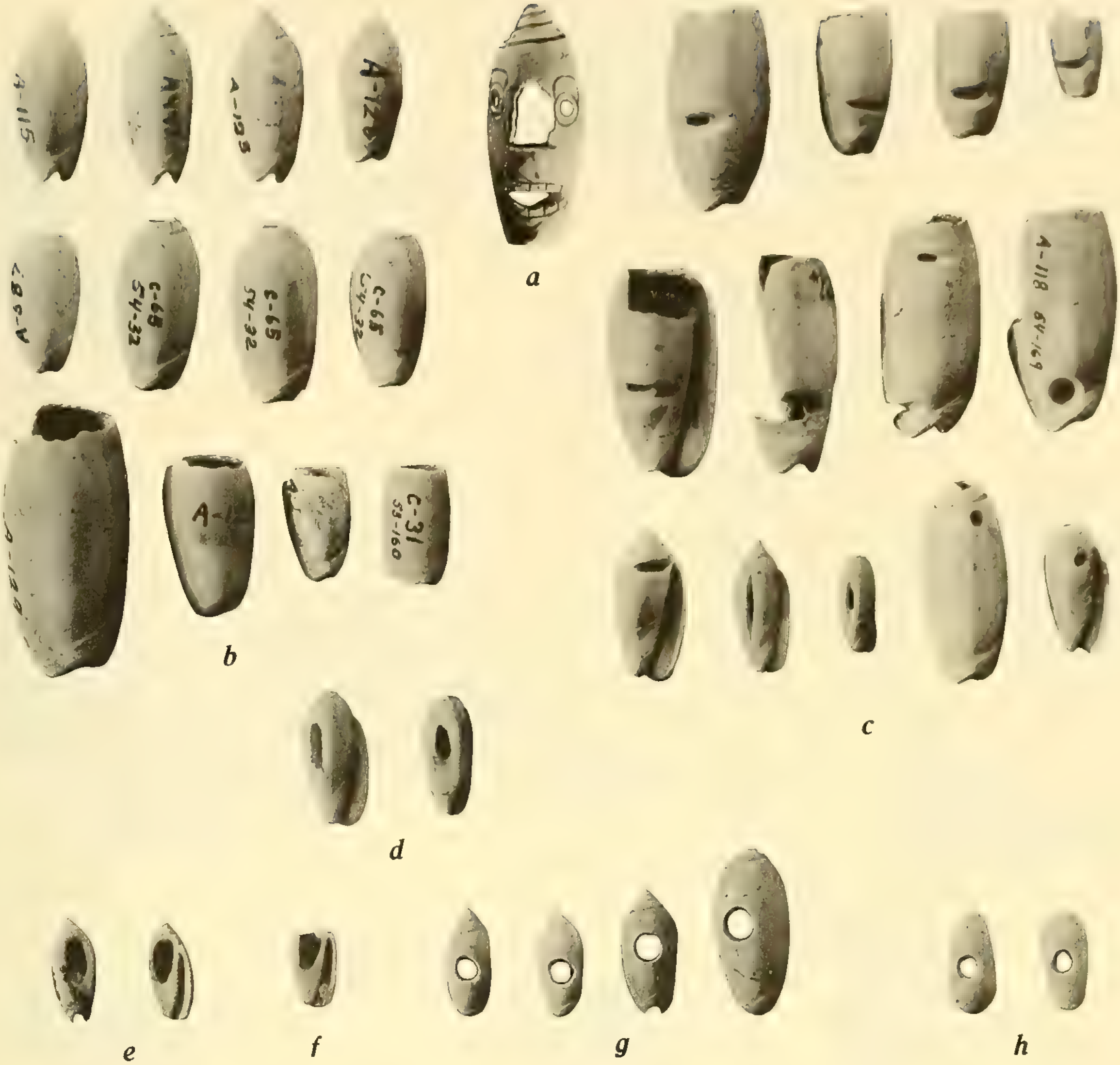
FIGURE 44

FIGURE 45. Worked *Oliva* *reticularis*. Mayapan. Scale approx. 3/5.

a: Carved *Oliva* shell. 5.1 cm max. Mouth is formed by slit perforation. Eyes cut. Two longitudinal slip perforations on back, now broken. Lot C-1.
b: Unpierced *Oliva*. Top row: unworked shells. Middle row: "tinklers" with cut spire. Bottom row: first three, "tinklers" cut at shoulder; last specimen with two cuts.
c: *Oliva* shell, pierced "tinklers." Top row: normal tinklers with slit perforation. Middle and bottom rows: tinklers with unusual cuts and perforations.
d: *Oliva* shells with vertical cut.
e: *Oliva* shells with two parallel vertical cuts, about 6 mm apart.
f: *Oliva* shell with two perpendicular cuts.
g: *Oliva* cut vertically in half and pierced with large hole (probably inset for eyes). Lots C-32, C-32, D-89, A-115.
h: Probably pieces of *Oliva* cut to represent eyes. Lot C-32.

FIGURE 46. Unworked bivalve shells. Mayapan. Not to scale.

a,b: *Cardium* shells (unidentified species).
c: *Dosinia* *concentrica*.
d: *Pinctada* *radiata* Leach.
e: *Arca* *occidentalis* Philippi.
f: *Arca* sp.
g: *Glycymeris* *pennacea* Lamarck.


A-115
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C-65 54-32
C-65 54-32
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C-31 55-160
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FIGURE 45

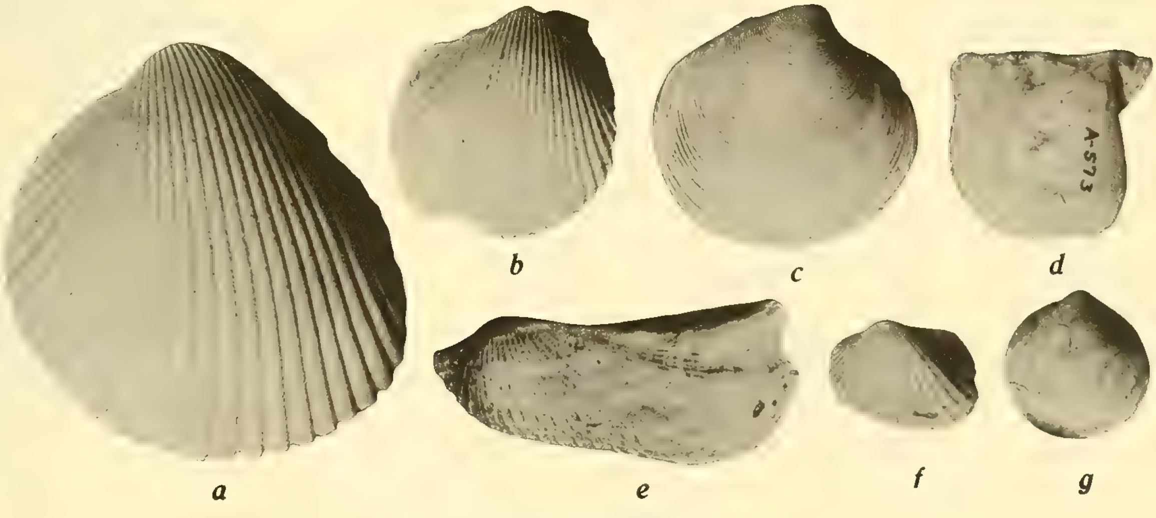
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FIGURE 46

FIGURE 47. Univalve shells. Mayapan. Scale approx. 2/5.

a,*b*,*c*: Shell trumpets. *Strombus gigas* Linné with cut spire.
d,*e*,*f*: Cut spires of *Strombus gigas* Linné; probably fragments of trumpets.
g: Shell trumpet. *Fasciolaria gigantea* Kiener. Lot C-126.
h: *Strombus pugilis* (?) with cut spire.
i-*k*: Small trumpets; *Strombus gigas* Linné.
m: *Conus spurius* Gmelin, with cut spire.
n: *Cymatium femorale* Linné.
o: *Busycon perversus* Linné.
p: *Busycon pyrum* Dillwyn.
q: *Ficus papyratia* Say.
r: *Fasciolaria gigantea* Kiener (young).
s: *Melongena bispinosa* Philippi.
t: *Fasciolaria tulipa* Linné.
u: *Orthalicus princeps* Sowerby (land snail), pierced.
v: *Phalium* sp.
w: *Oleacina* sp. (land snail).

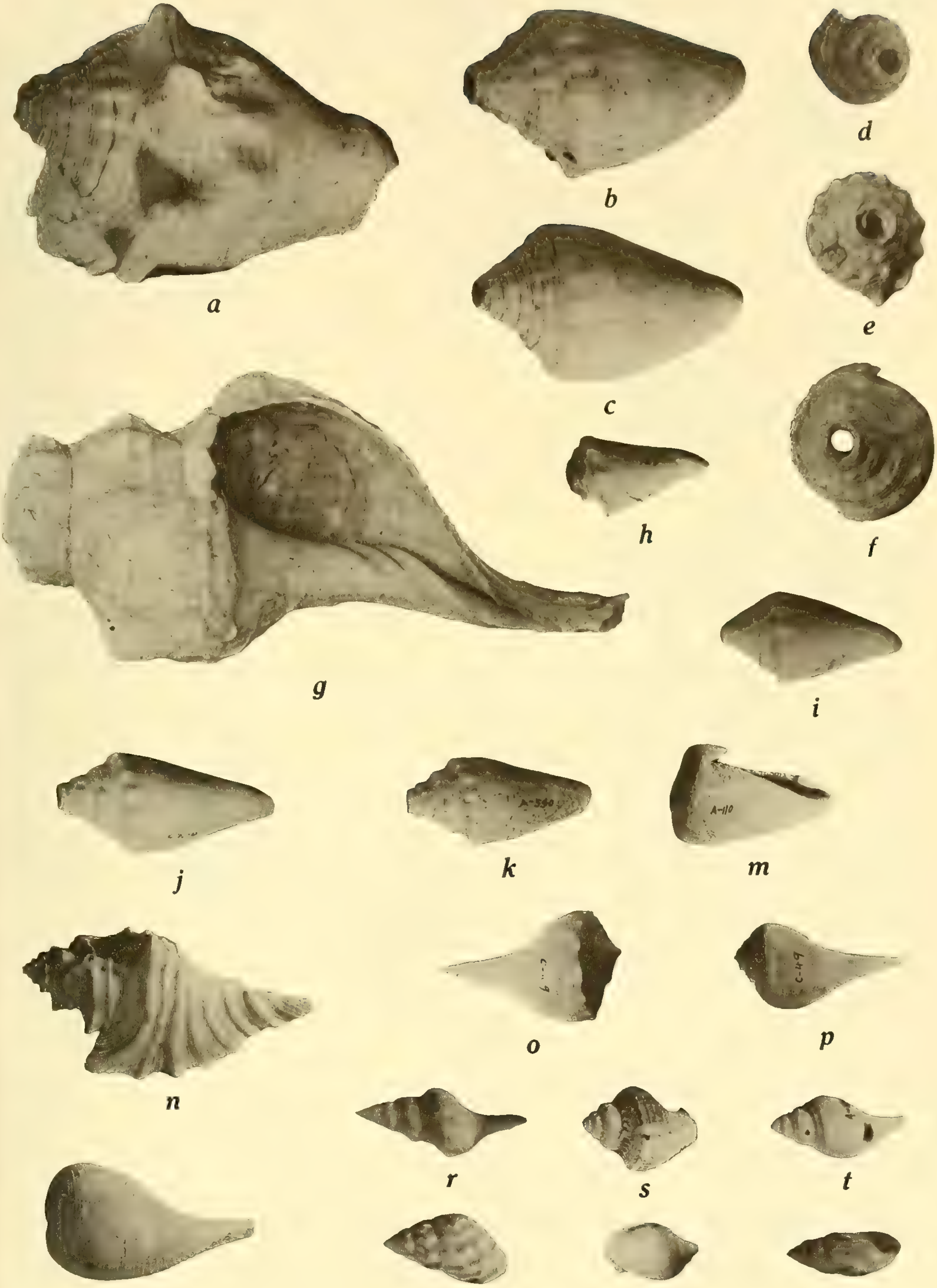
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FIGURE 47

FIGURE 48. Objects of copper. Mayapan. Scale approx. 3/4.

a-n: Finger rings.
a: No. 53-192. Fragment. Narrow band, with raised edge of rope design. Interior diam. approx. 1.35 cm, width approx. 0.35 cm. Lot C-55.
b: No. 55-97. Max. interior diam. 1.8 cm, max. width 0.35 cm. Section lightly convex. Minute fibers of textile adhering to edges. Lot A-550.
c-e: No. 54-175. Three rings found on human finger bone in tomb. Interior diam. 1.75 to 1.9 cm, width 0.35 to 5.0 cm. Sections lightly convex. Lot A-127.
f: No. 55-19. Irregular band. Max. width 0.5 cm, interior diam. 1.6 cm. Lot C-109.
g,h: No. 55-54. Two rings found in tomb. Interior diam. 1.75 cm, width 1.35 cm. Sections concavoconvex. Thickness just under 1 mm. Borders of braid design; one border on each ring interrupted by two small projections on opposite sides of circumference. Lot A-505.
i: No. 55-94. Similar ring. Interior diam. 1.8 cm, width 1.55 cm. Lot A-550.
j: No. 54-133. Interior smooth, diam. 1.55 cm; width 1.2 cm. Lot A-138.
k: No. 55-183. Thin concavoconvex band. Interior diam. 1.25 to 1.4 cm, width 0.9 cm. Lot A-563.
m: No. 55-95. Thin concavoconvex band. Interior diam. 1.3 cm, width 1.1 cm. Lot A-550.
n: No. 55-96. Interior diam. 1.9 cm, width 1.85 cm. Head hollow, opening on interior of ring; apertures in eyes and mouth. Fragment of textile adheres to one side of ring. Lot A-550.

o-r: Tweezers.
o: No. 55-277. Thin sheet, 4.2 × 2.1 cm. From burial, Lot A-585.
p: No. 54-7. Fragments. Lot C-1.
q: No. 54-176. Thin sheet, thickening to about 1 mm at handle. 5.5 × 3.0 cm. From tomb, Lot A-127.
r: No. 55-204. Thin sheet with twisted wire handle. 7.3 × 3.0 × 1.1 cm. From cist burial, Lot A-413.

s: No. 55-489. Point and chisel. 15.1 cm long. Probably post-Columbian. Square K. Lot A.

t-dd: Bells.
t: No. 54-9. Max. diam. 3.6 cm. Thin sheet. Contains copper pellet. Loop formed of two wires. Lot A-94.
u: No. 53-135. Max. diam. 2.6 cm. Made of thicker metal than above. Contains pellet. Lot C-39.
v: No. 55-157. Max. diam. 2.0 cm. Fillet encircling handle and lip of orifice. Contains pellet. Lot A-191.
w: No. 55-157. Max. diam. 1.8 cm. Loop appears to be single. Contains pellet. Lot A-191.
x: No. 55-205. Diam. 1.6 cm. Fillet-trimmed lip. Loop appears to be single. Lot A-418.
y: No. 55-101. Diam. 1.1 cm. Loop appears to be single. Lot A-402.
z: No. 54-108, 109. Bells from anklets of buried child. All but two contain copper pellets. Lot A-110.
aa: No. 54-267. Upper fragment of bell. Lot A-148.
bb: No. 55-25. Diam. 1.1 cm. Lot A-206.
cc: No. 54-208. Diam. 0.8 cm. Lot C-81.
dd: No. 54-132. Diam. 1 cm. Raised lip. Contains pellet. Lot A-130.
ee: No. 53-140. Pellet. Lot C-44.

FIGURE 49. Objects of fired clay. Mayapan. Scale approx. 2/5.

a,b,c: Perforated oval objects made from sherds of Mayapan Redware jars, slipped on one side. Lot C-76.
d,e,f: Weights (?) or sinkers (?) made of pottery sherds. d is of Black-on-cream ware; others, of Mayapan Redware. Lots C-54, C-32, C-107.

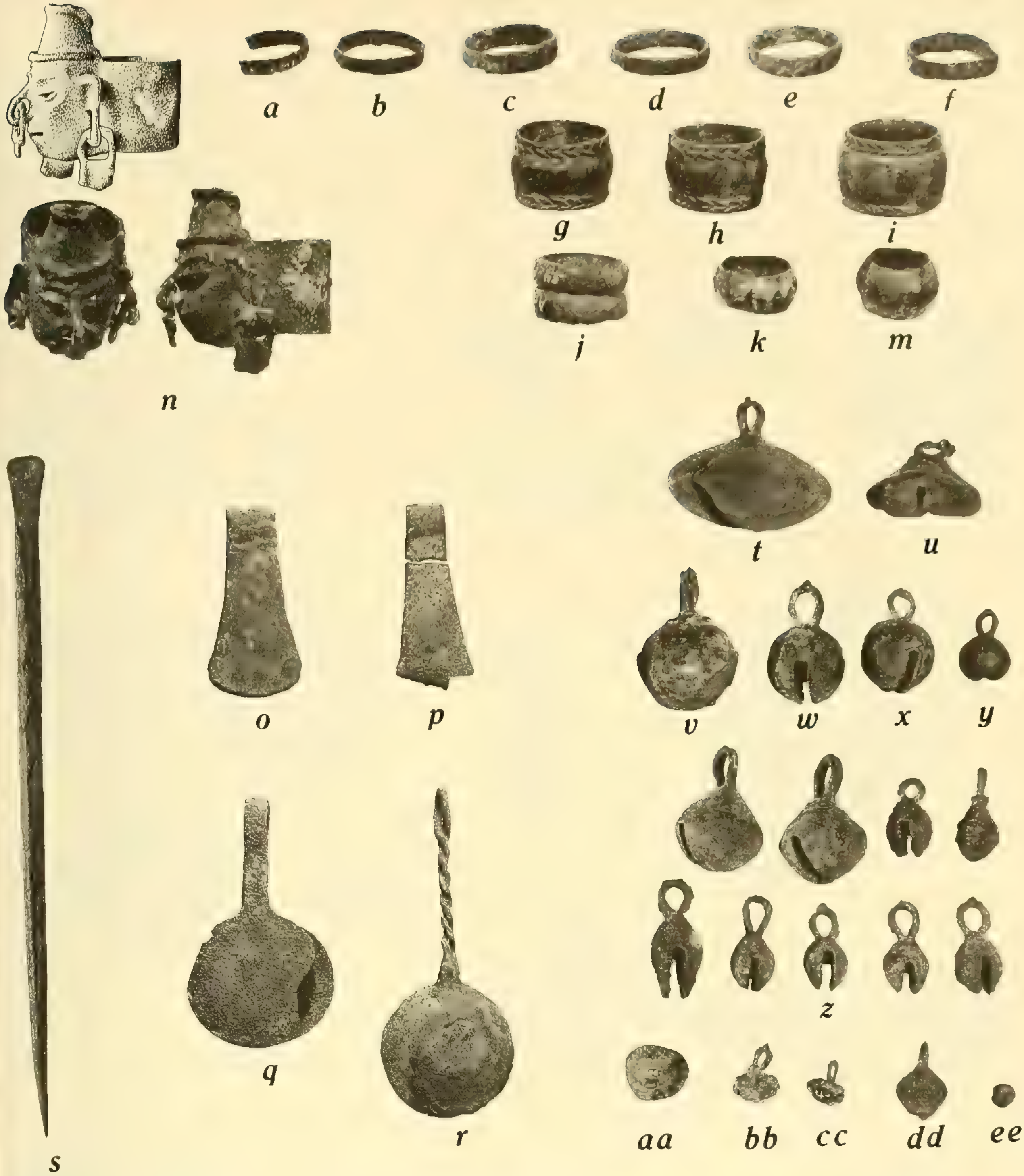
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FIGURE 48

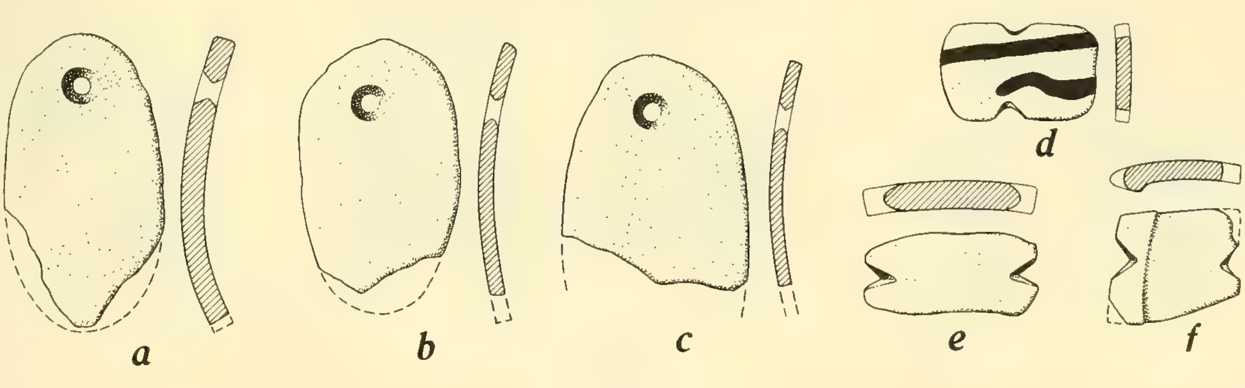


FIGURE 49

FIGURE 50. Objects of fired clay. Mayapan. Scale approx. 3/5.

a-g: Spindle whorls. a: No. 55-364, diam. 2.5 cm, Lot A-440. b: No. 53-60, Lot C-12. c: No. 54-232, Lot C-90. d: No. 52-118, Lot A-13. e: No. 53-166, Lot D-96. f: No. 55-384, Lot C-94. g: No. 55-182, Lot A-555.

h: No. 55-237. Fragment of pottery ring. Fine-textured gray paste with thick, white waxy finish. Lot A-206.

i: No. 53-219. Pair of earplug spools. Fine Orange paste. Max. diam. 3.6 cm. Lot C-60.

j: No. 55-393. Ring stamp. Diam. 7.6 cm; ht. 2.3 cm. Badly worn surface. Lot C-94.

k: No. 55-498. Fragment of ring stamp. 2.3 × 1.9 cm. Thickness 0.9 cm. Lot A-442.

m: No. 52-96. Fragment of cylindrical stamp. Coarse red paste with gray core. Calculated diam. approx. 4.4 cm; ht. 5.5 cm. Northeast of Str. Z-106. Lot A.

n: Perforated discs. No. 55-136: 4.9×4.6×0.9 cm; calcareous coated, lightly striated ware; biconical perforation; Lot A-501. No. 55-320: 6.2 × 5.7 × 0.7 cm; Mayapan Redware, with slip on one surface; biconical perforation; Lot A-518. No. 57-39: cut disc probably with two perforations; Lot C-74. No. 52-149: 3.1 × 3.1 × 0.7 cm; Mayapan Redware; biconical perforation; Lot A-22.

o: No. 54-84. Chile grinder or pestle. Coarse-tempered reddish pottery. 5.5 × 3.0 cm. Roughly modeled animal head at tip. Smoothed surface at opposite end. Lot C-72.

p: No. 55-43. Sherd of Fine Orange pottery, with pre-fired perforations and impression of mat on one face. Lot A-165.

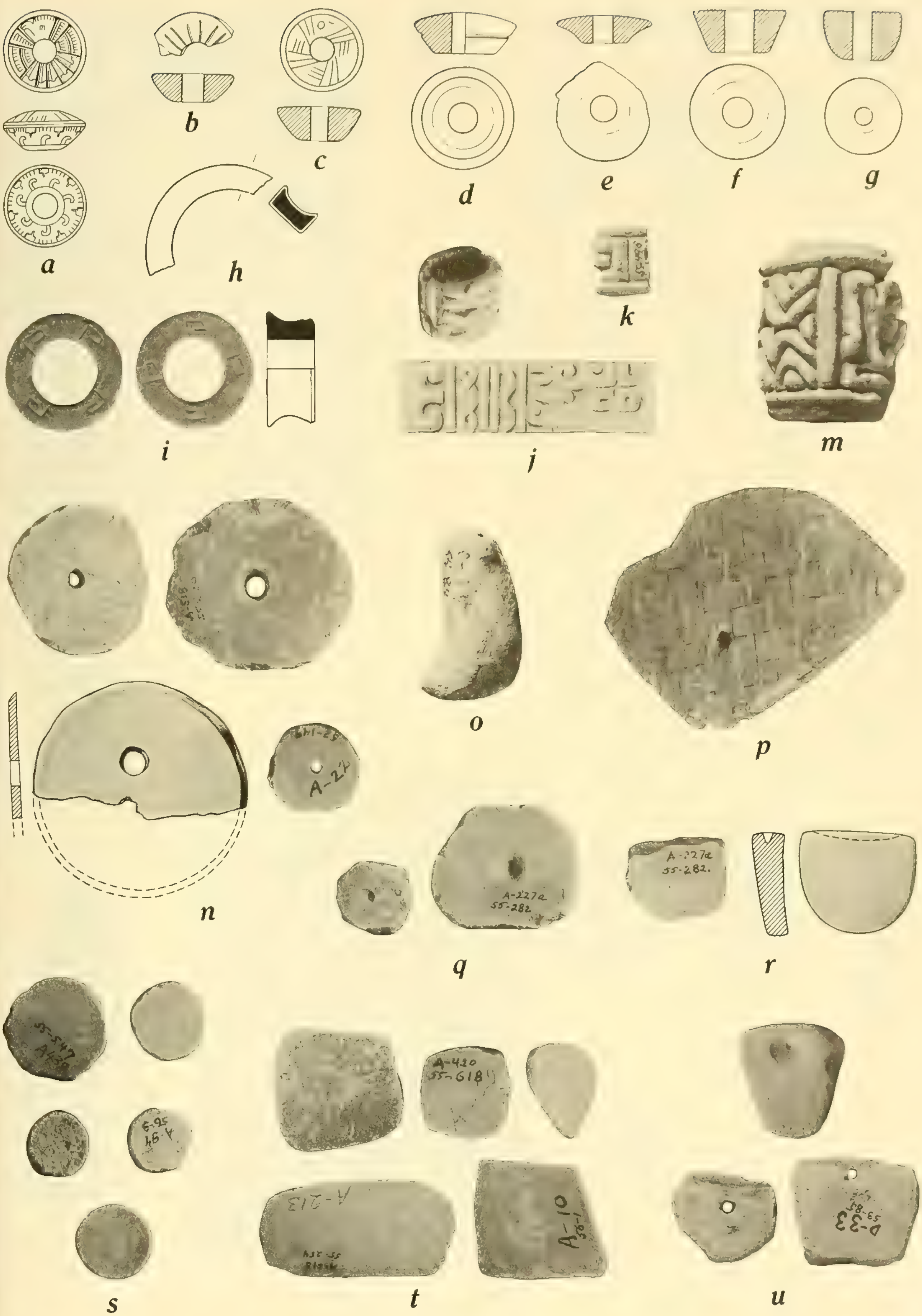
q: Two drilled pottery discs. No. 55-620: diam. 2.6 cm; thickness 0.8 cm; Mayapan Redware, both sides slipped; pit drilled in center on one side; Lot A-436. No. 55-282: 5.0 × 4.0 × 1.0 cm; Mayapan Redware, both sides slipped; drilled pit on one side; Lot A-227a.

r: Two sherds with groove on edge. Lots A-227a and C-74.

s: Small pottery discs. Probably all of Mayapan Redware. Largest about 3.4 cm. Lots A-438, A-251, A-403, A-97, A-585.

t: Various shaped sherds. All of Mayapan Redware. Largest 6.4 cm. Lots A-57, A-420, D-49, A-213, A-10.

u: Three drilled sherds, with groove on one edge. Probably Mayapan Redware. No slip remaining on first specimen. Lots D-38, A-522, D-33.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A-438
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FIGURE 50

FIGURE 51. Artifacts from the vicinity of Mayapan. e not to scale; others approx. 2/5.

a: Ornaments of stone and shell. Top row. No. 54-10: fragment of carved stone from Santa Cruz, near Mayapan; Lot E-55. No. 56-10: small limestone bead from Chacchob, Q. R.; Lot E-505. No. 54-51: jade bead from Santa Cruz; Lot E-59. No. 54-48: fragment of limestone bead; diam. about 3 cm; from Santa Cruz; Lot E-78. Second row. No. 54-50: three perforated jade discs from Santa Cruz; light green mottled jade; diam. about 4 cm, thickness 3 to 5 mm; biconical perforations; Lot E-59. Third row. No. 54-11: unidentified object of shell from Santa Cruz; Lot E-50. No. 54-52: two perforated shell discs from Santa Cruz; Lot E-59. Bottom. No. 54-4: ornament of nacreous shell, *Pinctada mazatlanica* Hanley (oyster, probably from Pacific coast), from Santa Cruz; Lot E-49.

b: Flints of Mayapan type from Santa Cruz. No. 54-272: sharp point; Lot E-68. No. 54-273: sharp point with angular base; Lot E-73. No. 54-274: hatchet-form tool; Lot E-70.

c: Dark and opaque flints, probably of Classic age. First two, fragments of stemmed points from Chacchob; others, from Santa Cruz. Note characteristic pitted fractures.

d: No. 55-99. Copper bell from Cenote Dzantun Ch'en, 2 km south of Mayapan.

e: Fragments of onyx-marble vessels from Uxmal, showing two rim sections and incised body sherd, 2 × 4 cm. Wall thicknesses vary from 3 to 8 mm.

f: Pottery spindle whorls. First four from Chacchob, of reddish clay similar to that of Slate ware, but unslipped: No. 55-529, Lot E-507. Last specimen, of unslipped gray paste, from Telchaquillo: No. 54-49, Lot E-97.

g: Stone plug from Chichen Itza, probably architectural ornament.

h: Shell artifacts from Carnegie Institution 1955 excavations at Chichen Itza and Balam Canche. Conch rings: Lots G-8 and G-7. Odd forms of conch: Lots G-26, G-26, and G-7. Small perforated conch: Lot G-32. *Spondylus*, perforated: Lot G-10. *Marginella labiata*: Lot G-32. *Oliva*, with three perforations: Lot G-85.

i: Flint objects from the same excavations. No. 55-390: flint scraper from Balam Canche; Lot G-86. No. 55-398: stemmed point; Lot G-30. No. 55-399: fragment of dart point (?); Lot G-30. No. 55-400: fragment of point; Lot G-35.

j: Pottery spindle whorls from Chichen Itza. No. 55-381, Lot G-8. No. 55-382, Lot G-8. No. 57-33, Lot G-47a. No. 55-383, Lot G-8. No. 57-34, Lot G-69.

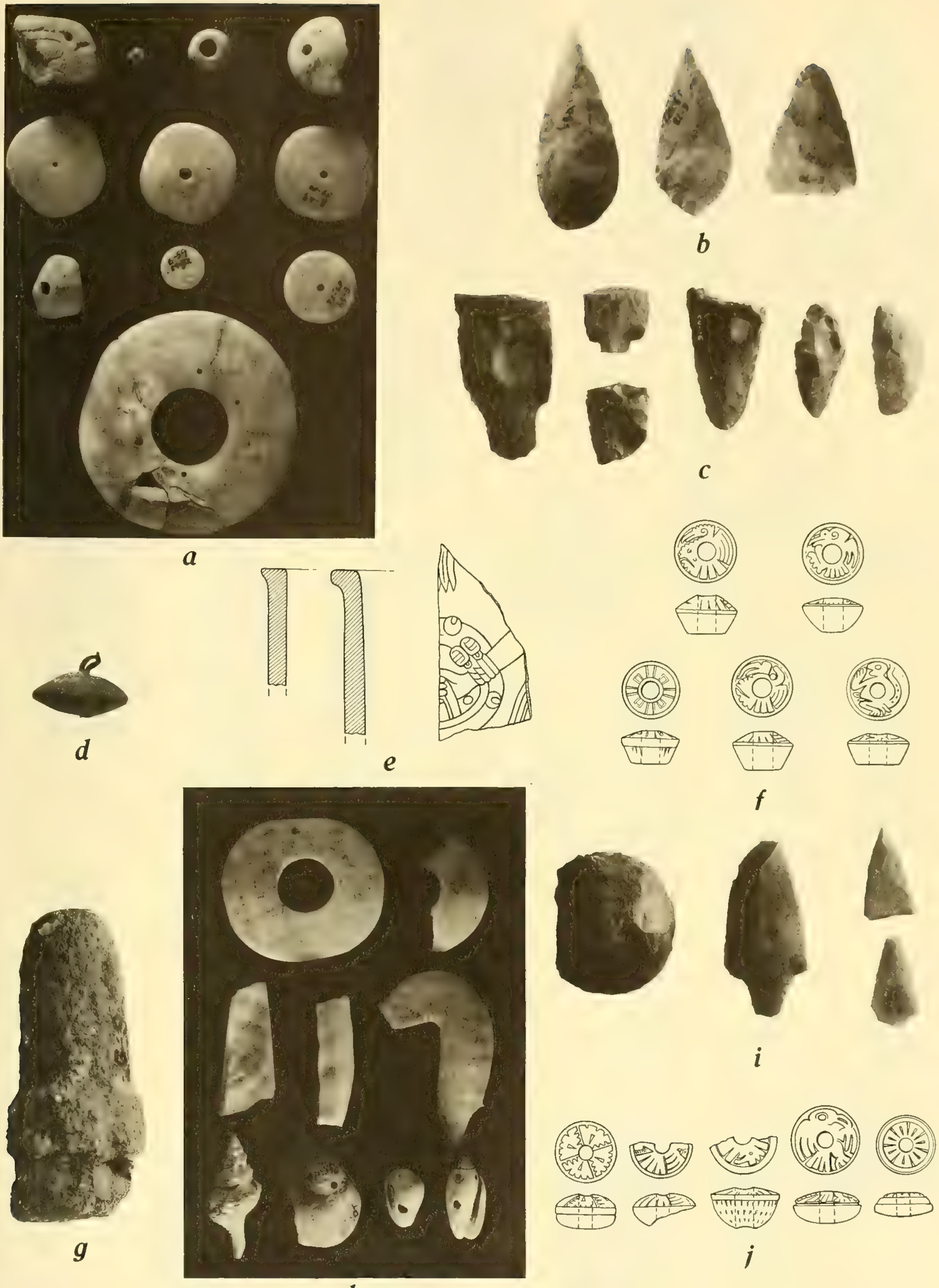
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FIGURE 51

FIGURE 52. Representative objects from Chichen Itza

a: Sculptured turtle found in debris near Sweat House, Str. 3E3.
b: Typical pointed pecking stone, about 13 cm max.
c: Large grooved hammer, about 16 cm max.
d: Slate chisel (?). Found on sacbe near the Caracol, Str. 3C15.
e: Celt. Material not specified. In debris near Caracol, Str. 3C15.
f: Large celt. Location unknown.
g: Small "greenstone" celt. From surface collection, North terrace.
h: Small celt, from Str. 3C5 or 3C6.
i: Ceremonial blade, from Monjas excavations, Str. 4C1, 3, 4. Probably of Maya period date. Note quality of chipping.
j: Ceremonial blade from Temple of the Four Lintels, Str. 7B4.
k: Chipped flint blade pointed at both ends. From Str. 3C5 or 3C6.
m: Chipped flint blade or "sacrificial knife." Initial Series Group.
n: Chipped flint blade or "sacrificial knife." On floor of North Colonnade, 2D10.
o: Narrow thick blade or chisel from Str. 3C5 or 3C6.
p: Narrow pointed blade. From group south of the Caracol, Str. 3C15.
q: Stemmed point. Temple of the Four Lintels, Str. 7B4.
r: Stemmed point. On floor, Str. 3C5 or 3C6.
s: Stemmed point. From debris dredged from the Sacrificial Cenote.
t: Stemmed point. From excavations south of the Caracol, Str. 3C15.
u-*x*: Side-notched points. Various locations.
y: Hatchet-form flint. From Initial Series Group, Strs. 5C1-8.
z: Asymmetrical knife. Found near Temple of the Phalli, Str. 5C14.
aa: Asymmetrical knife. From Initial Series Group, Strs. 5C1-8.
bb,*cc*: Triangular points. From Strs. 3C5, 3C6.
dd,*ee*: Arrow points. From debris near the Caracol, Str. 3C15, and near the Temple of the Wall Panels, Str. 3C16.
ff: Flat abrading pebble. From excavations in South Annex of the Caracol, Str. 3C15.
gg-*hh*: Fragments of "choppers" or digging tools from Initial Series Group, Strs. 5C1-8.
ii: Broken chipped celt from Strs. 3C5, 3C6.

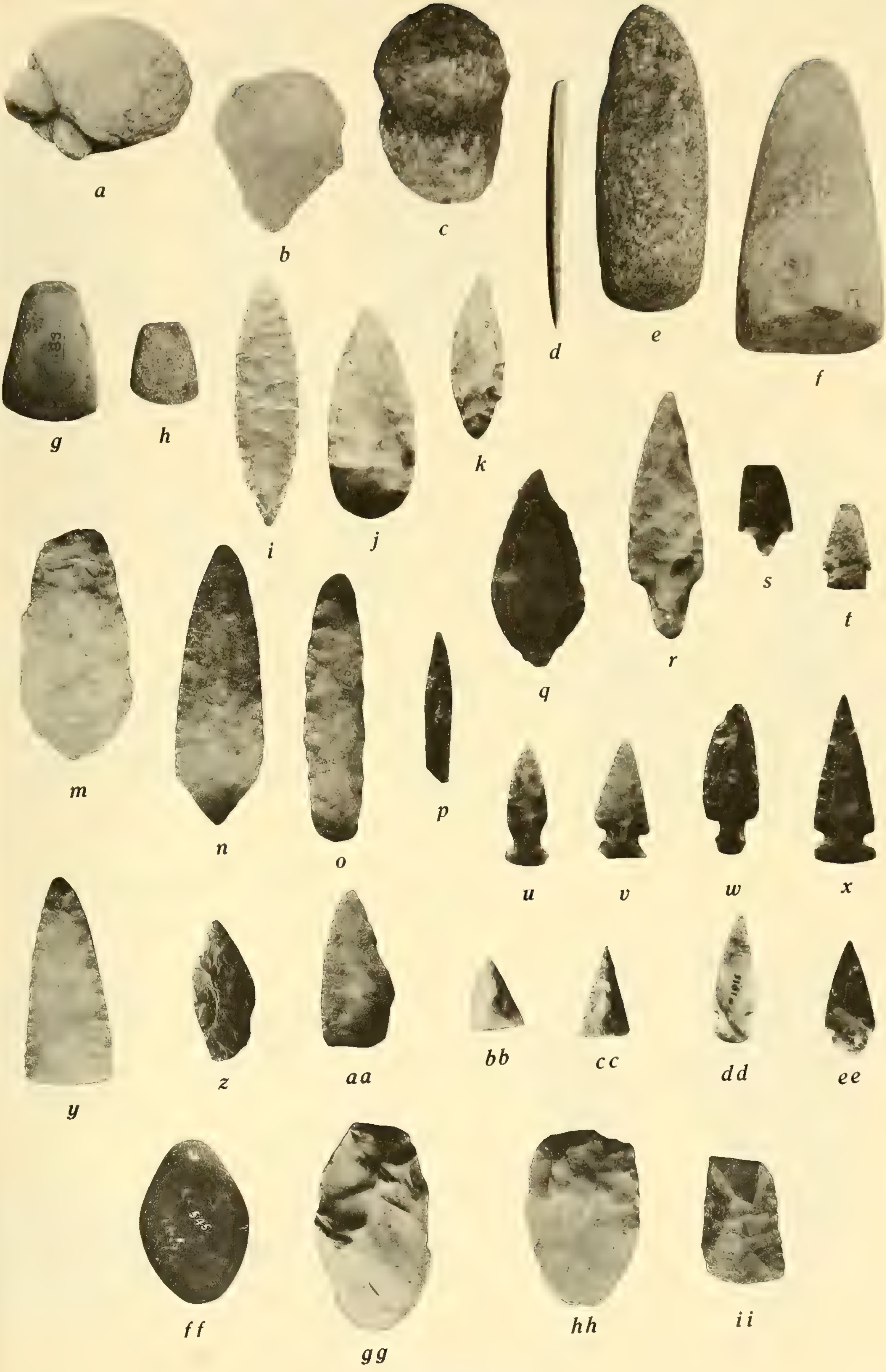
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FIGURE 52

FIGURE 53. Various objects, mostly from Yucatan and Quintana Roo

a-*e*: Heavy chipped celts from pre-Mayapan sites. *a*,*b*,*c* are reproduced through the courtesy of the Peabody Museum of Harvard University. *a*: 15.2 cm long, of veined white chert, is from the Usumacinta region. *b*: 19.5 cm, is from Chichen Itza. *c*: 13.6 cm, of dark brown flint, is from Labna. *d* and *e* are from the collection of Major J. A. L. Möller and come from the region of Chetumal.

f: Side- and corner-notched points from the Peabody Museum's collection of artifacts from the Sacrificial Cenote of Chichen Itza. The first point is 7.3 cm long. The specimen at the lower left retains a gummy substance which shows the imprint of the shaft.

g-*i*: Flint objects from the Möller collection, from Chetumal.

j: Carved obsidian tube from the Sacrificial Cenote of Chichen Itza. Peabody Museum of Harvard University collection.

k,*m*: Two copper points from surface excavations at Chichen Itza.

n: Small jade earplug flare, from excavation of the Monjas, Chichen Itza, Str. 4C1.

o: Jade "button," from cache found in the Mercado, Chichen Itza, Str. 3D11.

p,*q*: Shell ornaments from Chichen Itza.

r: Metal fish hook, from surface excavations, Chichen Itza.

s: Tubular jade bead from Monjas excavations, Strs. 4C1, 3, 4, Chichen Itza.

t-*w*: Various shell objects from Chichen Itza.

x,*y*: Two large shell scoops. Möller collection, Chetumal region.

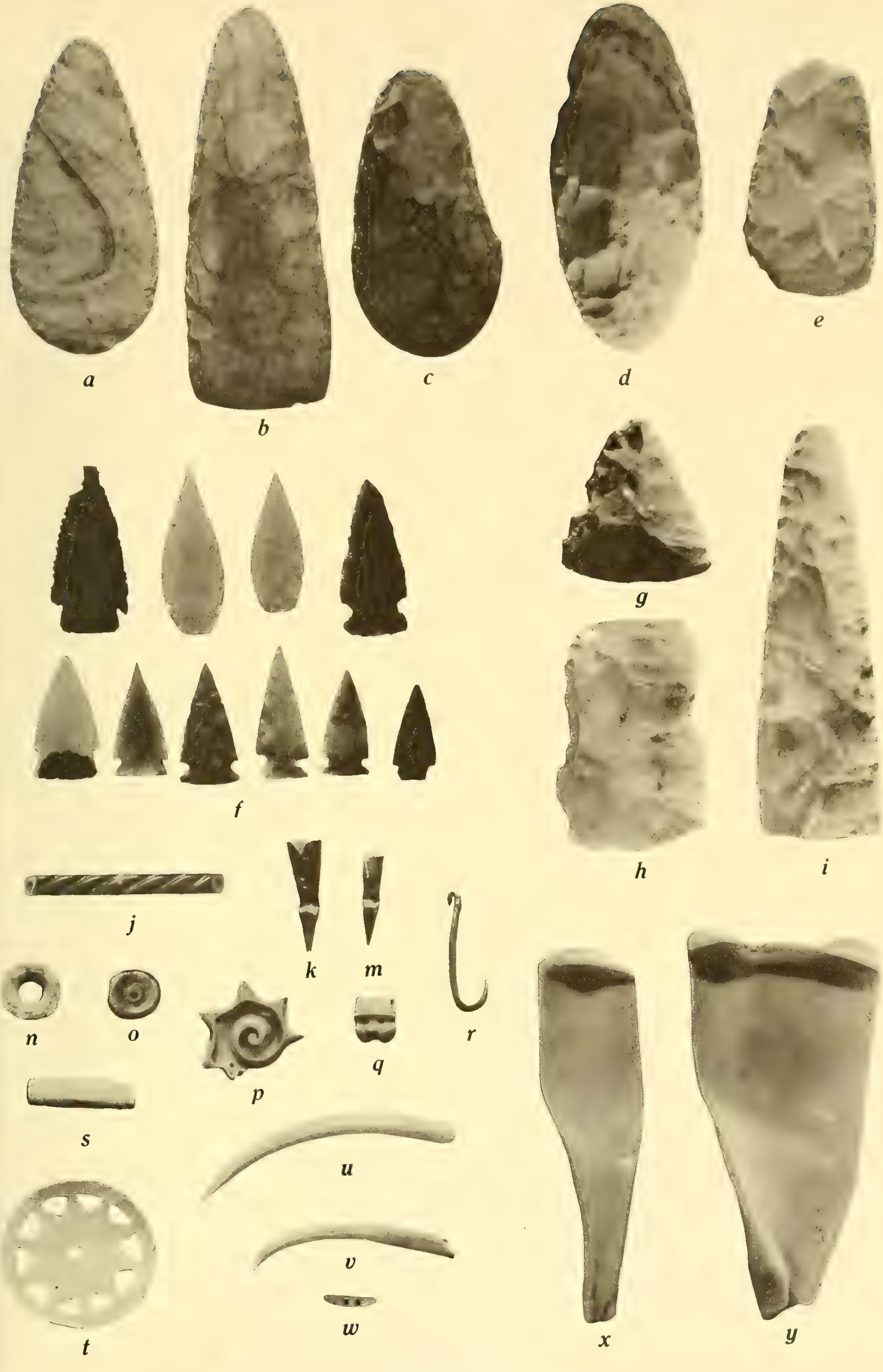
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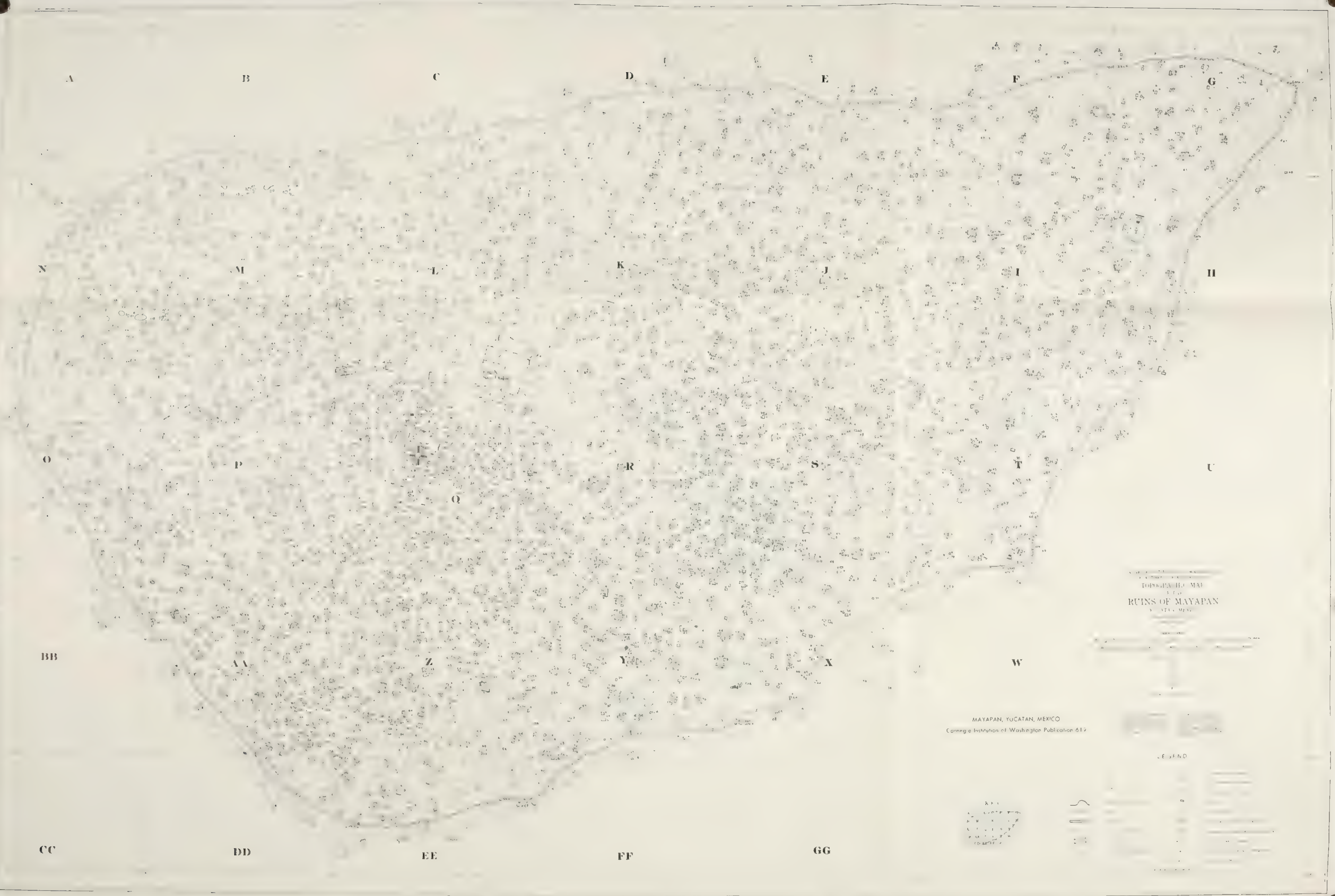
FIGURE 53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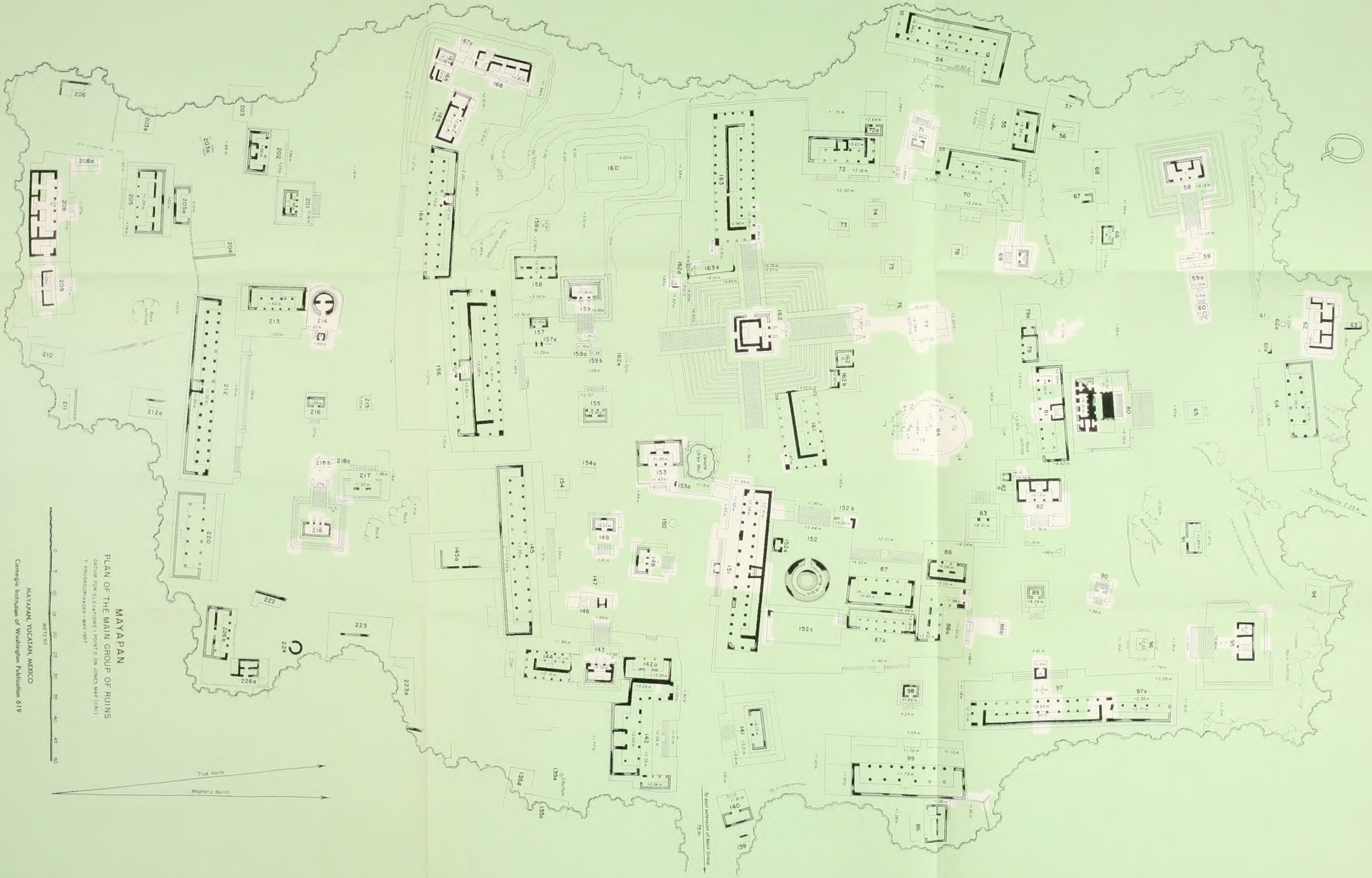
TOPOGRAPHIC MAP
OF THE
RUINS OF MAYAPAN
YUCATAN, MEXICO
LEGEND

MAYAPAN, YUCATAN, MEXICO

Carnegie Institution of Washington Publication 619



MAYAPAN

PLAN OF THE MAIN GROUP OF RUINS

DATUM FOR ELEVATIONS = POINT O ON JONES MAP (CR1)
T. PROSKOURIAKOFF – MAY 1957

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METERS
True North
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To Telchaquillo 2.25 km
To east extension of Main Group 75 m
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